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Editorials.

AN UNWARRANTABLE "ANTHRAX" CONVICTION.

A CASE of very great importance to members of the veterinary profession in the British Isles was heard by the magistrates at Knutsford (Cheshire) Petty Sessions on the fifth of last month, and if the decision is allowed to stand, it will in future make it impossible for Veterinary Surgeons to legally make *post-mortem* examinations on any animals that may die suddenly in which the cause of death is not obvious—that is, in those cases where the examination itself would be unnecessary. Many of our readers may already be conversant with the facts of the case, which would appear to be as follows. A cow belonging to Mr. Clarkson was found dead in the field one morning, without any obvious cause. Mr. Clarkson did as most sensible farmers would do, he sent for his veterinary adviser, Mr. J. Norbury, M.R.C.V.S., in order that the cause of death might be ascertained. Mr. Norbury, being a cautious man, and knowing anthrax to be one of the many possible causes of sudden death, proceeded in the most approved manner to investigate the cause of death, and in such a way as to cause a minimum of risk in the event of the case being found to be anthrax. He cut off an ear in order to obtain material for microscopic examination. After examination he suspected anthrax, and when his diagnosis was confirmed by a specialist, he immeditely caused the case to be reported to the police, according to the Anthrax Order of 1899. Mr. Norbury is apparently not an Inspector under the Contagious Diseases

(Animals) Act, so he was charged that he "unlawfully did deal with the carcase of a diseased or suspected animal in contravention of the Anthrax Order of 1899, by cutting the skin of the carcase of such animal." It is ridiculous for the police to assert that Mr. Norbury must have suspected anthrax, or he would not have cut off an ear. Some of the police assume far too much, and are in the habit of stating their imaginations as facts in a most emphatic manner, knowing that the magistrates are frequently as ignorant of the technical aspect of these cases, and are quite ready to take the statements for truth if sufficiently emphasised. The sergeant in this case was ready to make an immediate diagnosis of anthrax. He said "It showed all the signs of having died of anthrax." It is the old story over again, "Fools step in where angels fear to tread." But it may be worthy of note that the policeman's diagnosis was made after the existence, not the suspicion, of anthrax was reported by a professional man. After hearing the evidence, the magistrates decided to convict Mr. Norbury, and accordingly they fined him.

Now we venture to say that if this case is allowed to stand, it will be a very serious blow to the veterinary profession. Moreover, it will be another instance of the law being reduced to a farce, for all cases of deaths of animals susceptible to anthrax (cattle, horses, sheep and pigs) from unknown causes, will have to be reported to the police as suspected of anthrax. The point that he suspected anthrax was made against Mr. Norbury because of his examining for anthrax. Under a similar argument a man would be culpable if he examined the ragged fleece of a sheep instead of immediately reporting it as a suspected case of scab.

This is an instance in which it is imperative for the Royal College of Veterinary Surgeons to take up the case and appeal. The question involves the profession at large, and an individual should not be made to pay for it. It is a striking and opportune instance of the necessity for funds in the coffers of the Royal College of Veterinary Surgeons, as a strong corporation has a much greater power to establish its rights than a weak one. In any case, whether they have the money or not, it is essential that the Royal College should appeal at once, and if they have not the money they should open a fund for the purpose of carrying on this case. Members of the profession would, we are sure,

willingly contribute to such a fund as a matter of protection, since it appears to be left to the police to say whether any case of a contagious notifiable disease should or should not have been immediately diagnosed or suspected. It would be difficult to imagine a more humiliating position than for a professional man to be dictated to on technical cases by that living encyclopædia, the village policeman, who is ever ready to diagnose any of the contagious diseases at a single glance.

THE QUACK "CANINE AND FELINE EXPERT."

ALTHOUGH not quite so numerous, perhaps, in the veterinary world as in that of human medicine, the quack medicine vendor still does a flourishing trade; but now and again one who has more self conceit than his fellows will go a step further and arrogate unto himself a title by which he palpably intends to mislead the public into the belief that he possesses the knowledge of a properly qualified veterinary surgeon, with the inevitable sequel that the Royal College must give him especial attention. A case of this kind occurred some months ago in one of the residential suburbs of London, and the self-assumed "expert" was promptly brought to a sense of his proper position.

Another case, of the greatest interest to the whole profession, was decided on September 30, at Feltham, in Middlesex, and a report is given in detail on page 619. Briefly, the facts are that a man named Wilson, who trades as an animal medicine vendor and runs a boarding kennel for dogs and cats at Ashford, in Middlesex, became so inflated with the idea of his own importance that he went so far as to describe himself as a "canine and feline medical expert." He made diagnoses and treated any poor brutes entrusted to his charge by ignorant owners, and even presumed to give certificates. It was one of the latter which largely caused his downfall, as, if the newspaper report is to be believed, the "initial diagnosis," aided by the use of a stethoscope and a formal certificate, when a St. Bernard puppy was taken for treatment was "kidney trouble," and this shortly afterwards became "rickets," and finally "worms."

According, too, to statements made in other quarters, Wilson

has advertised himself as "Canine and Feline Medical Expert," by appointment, to several dog and cat clubs or societies, and he even went to the length of taking upon himself the responsibility of inspecting all the dogs sent to a recent show held at Staines; this, too, although there were several veterinary surgeons in the neighbourhood enthusiastic enough about canine work to have helped the society by voluntarily giving their services.

That this should be allowed by the Kennel Club is as inexplicable as the fact that any large canine society should have the want of tact to entrust the inspection for disease of a lot of valuable dogs to the care of a man whose only qualification is that his self-conceit is of a sufficient thickness to mask his ignorance. It is astonishing what "bluff" will do, but owners of animals are not all fools nowadays, and if any contagious disease has emanated from that show the society should certainly be held to have been guilty of culpable neglect, and the matter will probably have to be finally decided by that Court of Appeal of the canine world, the Kennel Club. That this particular offender against the rights and privileges of our profession was convicted is a further proof of the value of our charter, and another instance of the necessity for a ready response to the present appeal of the Royal College for funds to enable the Council to follow up, amongst other things, cases of this kind.

Had it been possible for this fellow to have upheld his claim to the self-assumed title of "Canine and Feline Medical Expert," there would have been no limits to the possibilities in front for any and every quack who should choose to assume the title or to invade the "equine," "bovine," or other branches.

It will be well to particularly see that in our forthcoming new charter it is clearly and indisputably written that any such title which *implies* an assumption of expert veterinary knowledge, if used to deceive the animal-owning public, shall be a punishable offence.

Original Articles.

CASES OF DEVELOPMENTAL IRREGULARITY.

BY T. W. RUDD, CAPTAIN A.V.C., FROM THE ANATOMY DEPARTMENT, ROYAL (DICK) VETERINARY COLLEGE, EDINBURGH.

Abnormal Development of a Lamb's Head.

This interesting specimen of a lamb's head, which may be termed a semi-cyclopia, possessed some peculiar abnormalities.

With the exception of the anterior part of the face, the head appeared to be normally developed. From the supero-anterior part of the frontal region a proboscis-like structure was given off, which was about twice the thickness of a lead pencil, with a partly-divided opening at its free extremity (fig. 1, a). Situated underneath, and quite close to the base of the proboscis, were two eyes, centrally and horizontally placed with a conjunctiva common to both, and no bony partition between them.

Fig. 1.

The premaxilla was absent, and the upper lip was well developed, but lanceolate in shape. The hard palate did not possess any abnormality, but the posterior nares was represented by a small opening leading into a short cavity which ended blindly anteriorly.

The tongue was peculiar in that it did not possess the customary enlargement on the dorsum in its posterior third.

On examining the brain, it was found that there was an entire absence of cerebral convolutions and division of the hemispheres. The cerebrum was enormously distended with fluid contained in what appeared to be a common ventricle.

The two hippocampi formed a thin layer over the optic thalami and quadrigeminal bodies. Close to the pons was placed the corpus albicans, which was very small, and the tuber cinerium was large and separated from the albicans by a deep, narrow depression.

The anterior corpora quadrigemina were of good size, but the geniculate bodies could not be demonstrated.

The optic nerve was single at its origin, and appeared to arise directly from the optic thalamus, but the pons, medulla, and cerebellum presented a normal appearance. There was not the least sign of olfactory bulbs.

The orbit and eyes were carefully examined, and it was found that perfect lachrymal glands and nictitating membranes were present.

The two inferior recti muscles were joined together in the region of the optic foramen, and the two internal recti formed a single muscle running across from one eye to the other without any bony attachment. The external recti and retractor muscles were present in each eye. Externally, the eye-balls were perfectly formed and not fused, and the optic nerve, which was single until it reached the eye-balls, divided into two small branches, one for each eye. On section, both eyes appeared to be perfect in every respect.

The "proboscis" was hollow, and composed of cartilage and fibrous tissue. It was partly divided in its long axis by what seemed to be a turbinated bone.

It seems clear that the case is one of marked schistoprosopia, and has resulted from a failure of fusion between the nasal and maxillary processes. For some reason or other, the condition has been accompanied by a marked hydrocephalus. It is noteworthy that a similar condition has recently been described as occurring in the pig (*Veterinary Record*, May 4, 1907, p. 711), but the recorder—who speaks of it as "elephantiasis"—unfortunately gives no more than the barest details of external conformation.

We are indebted to the kindness of Mr. J. Henderson, M.R.C.V.S., for the opportunity of making an examination of an extremely interesting, and apparently far from common, abnormality.

Encephalocele in a Lamb.

The subject of this short description, we have been informed by Mr. R. S. Rowlands, M.R.C.V.S., of Abergele, who was good enough to send the specimen, lived for about a month after birth, being artificially fed from a teat on cow's milk. It had no control of limbs or head and lay stretched out on its side. The head was generally kept in a backward direction and inclined to one side. The eyes were always kept closed. The appetite was good and there was no disturbance of the digestive functions. Death was probably due to irregular feeding on cow's milk.

The herniated structures involved in this case were sclerosed, and composed of part of the right cerebral hemisphere and whole of the left hemisphere of the cerebellum.

On examining the brain it was found that the great longitudinal fissure of the cerebrum extended in an oblique direction (fig. 2), and part of the left hemisphere consequently was placed in front of the right.

The pons was rather poorly developed, but all the cranial nerves were present. The skull when viewed from the front, showed that the right orbit was placed a little more anterior than the left. The supra-occipital and two parietal bones were completely fused, and situated in this common mass of bone, in front of the occipital crest, was a large ovoid foramen through which the brain was herniated.

The hernia presented a rounded, red, irregular swelling covered by dura, which was adherent to the external periostium and to the skin covering the whole mass.

FIG. 2.

1. Left cerebral hemisphere.
2. Great longitudinal fissure.
3. Right cerebral hemisphere.
4. Cerebellum.
5. Herniated brain.

MICROPHTHALMOS.

This specimen occurred in a well-developed thoroughbred foal which was destroyed a few days after birth. The orbits were of normal size, but both eyes were represented by small functionless bodies about twice the size of a pea. All the muscles of the eyeball were demonstrated, but the apparent right superior oblique was fused with the anterior part of the superior rectus. The small bodies representing the eyes were semi-solid in consistence, irregular in shape, and composed of cartilage and pigmented tissue. Both contained a small quantity of clear fluid, and in the left there was a small body about the size of a split pea, resembling a lens in structure. With the exception of the optic tract and chiasma, which were thin, and the mesial geniculate bodies, which were a little less prominent than usual, everything else in connection with the brain seemed to be normal.

The Department is indebted to Mr. A. Baird, M.R.C.V.S., Edinburgh, for this interesting specimen.

STOMACHAL AND INTESTINAL PARASITISM OF LAMBS.—BARE LOT *v.* GRASS LOT.

BY W. H. DALRYMPLE, M.R.C.V.S., BATON RONGE, LOUISIANA.

DURING previous experiments by the Veterinary Division of this Station to endeavour to obtain some practical method by which lambs could be raised free, or virtually so, from nodule disease of the intestines, it was found that notwithstanding the success attained by the "bare lot" method stomach worms (*Hæmonchus contortus*) were always found in considerable numbers in the abomasum, or fourth compartment, of the lambs' stomachs.

It was decided, in the early part of the present year, to continue the experiments with nodule disease, and to include also treatment directed against stomach worms, and, at the same time test the difference in the results, if any, that might be secured with lambs raised on a grass lot, as against those kept on a bare lot, or one free from grass.

The bare lot used was the same as that employed in last year's work, but after the lambs were taken off in September, 1906, the ground was thoroughly ploughed and harrowed, and left in that condition until the latter part of February, when it was hoed and raked over and put in final shape for the reception of the ewes and lambs. The grass lot had not been occupied by sheep at all since January, 1904, when three lambs occupied it for about six months, but which, when butchered and examined, did not have any sign of nodule disease.

As it was decided to use check, or control, animals, both in the pasture and bare lot tests, each lot was divided lengthwise by a suitable fence, and a small shed for shelter was provided for each bunch of ewes and lambs. The sheep had common salt before them all of the time in small boxes, and fresh water was provided out of wooden tubs. A little crushed grain was fed out of troughs once a day, and the bare-lot bunches were "soiled," or received cut green food out of racks. In short, the only difference in the method of feeding the ewes and lambs in the bare lot and on pasture, was that the latter had to obtain their green food by grazing, while the former received theirs from racks.

Thirteen native and common grade ewes, with young lambs, were purchased for the experiments. The oldest lambs were not more than two or three weeks old, and were from an extensive area of pasture country in the neighbourhood where sheep were not numerous, and where the chance of previous infestation of the lambs at such an early age was slight, if any. It should be stated, however, that the ewes had previously belonged to a flock in another section that was infested with both nodule and stomach worms.

On March 6, 1907, two ewes, with their lambs, were placed, without any previous treatment, in a section of the bare lot provided for the control, or check, animals; and three ewes and lambs were put in the control division of the grass lot. The remaining eight ewes and eight lambs were retained in a covered shed for treatment of the ewes before turning both into the lots.

Treatment of Ewes. March 15.—Each of four of the ewes was given 4 ozs. of a 1 per cent. solution of coal-tar creasote, and on the following day each of the remaining four ewes received a mixture of 1 drachm of carbon bisulphide and 1 drachm of absolute alcohol in 4 ozs. of sweet milk.

March 18.—The above treatment was repeated, with the exception that the carbon bisulphide was mixed with 2 ozs. of Carron oil (equal parts of raw linseed oil and lime water) instead of the alcohol and sweet milk. The Carron oil was found to be quite a satisfactory vehicle for the bisulphide when the mixture was well shaken before its administration.

The drenching was accomplished by means of a piece of $\frac{1}{4}$-inch rubber tubing, about $3\frac{1}{2}$ feet long, with a hard rubber nozzle inserted in the lower end, and a glass funnel in the upper. It was found that by gripping the rubber tube, just below the insertion of the funnel, with the under border of the left hand, the flow of the material could be easily regulated. An assistant introduced and held the nozzle in the animal's mouth.

March 19.—Each of the eight ewes received 8 ozs. of a saturated solution of magnesium sulphate (Epsom salts).

March 21.—The udders and surrounding parts of the eight ewes were washed with a 3 per cent. solution of carbolic and water to destroy any infection that might be present; after which they, with their lambs, were placed in their respective lots.

The above line of treatment was adopted with a view of destroying and dislodging parasites, either free nodule worms or stomach worms, that might be present in the ewes, as well as to destroy any infection that might be on the surface of the udders, teats, &c., before placing them with their lambs on the grass and bare lots which they were to occupy.

May 18—One of the three check ewes died in the grass lot. *Post-mortem* examination revealed extensive nodule disease, with a number of nodule worms (*Œsophagostoma columbianum*) free in the large intestine, and a few stomach worms in the fourth stomach.

May 25.—A second check ewe died in the grass lot, showing numerous nodules and several stomach worms.

June 2.—Two stray dogs unfortunately gained access to the check or control division of the grass lot and killed two of the lambs. One of the lambs showed numerous nodules, with a great number of stomach worms; in the other, a few stomach worms but no nodules that could be seen.

June 9.—The last one of the three control ewes, in the grass lot, died. She was extensively affected with nodule disease.

July 1.—One of the bare lot ewes, which had received coal-tar creasote solution, died in the experiment division. This ewe had always appeared somewhat emaciated and unthrifty. On account of the hot weather, decomposition had set in so rapidly that a *post-mortem* examination was not made. There could be little question, however, of her being severely affected with nodule disease.

It would seem that sheep which have survived the effects of stomach worms during lambhood, frequently succumb to nodule disease of the intestines when confined to areas where this disease is prevalent.

July 10.—The lambs in both divisions of the bare lot were weaned by the removal of their mothers.

July 15.—The grass lot lambs in the experiment division were weaned in a similar manner. It will be remembered, as already mentioned, that the last of the control ewes in the grass lot died on June 9.

July 28.—The remaining check lamb in the grass lot died. *Post-mortem* examination revealed great numbers of stomach worms in the fourth stomach, but no nodules, so far as could be discovered.

With the exception of the unthrifty ewe which died on July 1, no losses were met with among the ewes and lambs in the bare lot divisions.

Treatment of Lambs in Grass Lot.—July 17: One lamb, whose mother had received the coal-tar creasote treatment, was given 3 ozs. of the same solution. And another lamb, whose mother had been treated with carbon-bisulphide in linseed oil and lime water, was drenched with $1\frac{1}{2}$ ozs. of the same mixture, which was equivalent to $\frac{3}{4}$-drachm of the bisulphide of carbon. The remaining two lambs in this division did not receive any medicine at all.

July 24.—The same two lambs received similar quantities of the same medicinal agents.

Treatment of Lambs in Bare Lot.—July 17: The treatment of the lambs in the bare lot was, in every respect, a duplicate of that followed in the case of those in the grass lot, and the medicines were administered on the same dates, viz., July 17 and 24.

Our line of treatment was aimed at—(1) To test what effect, if any, the previous treatment of the mothers might have on the infection of the lots, and on the lambs that were not themselves treated; (2) to see if the two treated lambs would show better results than the two untreated ones (in both grass and bare lots); and (3) to note the difference, if any, in the efficacy of the two medicinal agents used.

No further treatment was given the lambs in either grass or bare lots, and on August 10 all of them (ten in number) were butchered and their stomachs and intestines examined for stomach worms and nodules.

Post-mortem Examinations—Bare Lot.

Experiment division in which the four ewes and two of the lambs had received treatment:—

(1) Ewe lamb, fairly nourished; treated twice with coal-tar creasote solution. Nodules: About two to three small nodules on large intestine. Stomach worms: Numerous.

(2) Ram lamb, well nourished; received no treatment. Nodules: One or two small nodules on large intestine. Stomach worms: Less numerous than in previous case (No. 1).

(3) Ram lamb, well nourished; treated twice with carbon bisulphide in Carron oil. Nodules: About two or three small nodules present. Stomach worms: Very few.

(4) Ewe lamb, fairly nourished; received no treatment. Nodules: One or two small nodules observed. Stomach worms: Not very numerous.

Check, or control, division in which neither ewes nor lambs had received any medicinal treatment:—

(1) Ram lamb, well nourished. Nodules: Three or four small nodules on large intestine, and about half a dozen scattered along small intestines. Stomach worms: Very numerous; that is to say, they could be found covering almost if not every part of the mucous lining of the stomach.

(2) Ewe lamb, well nourished. Nodules: No nodules that

could be detected. Stomach worms: Very numerous—similar to previous case.

Post-mortem Examinations.—Grass Lot.

Experiment division in which the four ewes and two of the lambs had received treatment:—

(1) Ewe lamb, poorly nourished; treated twice with coal-tar creasote solution. Nodules: Almost negative. Stomach worms: Extremely numerous. This lamb showed marked symptoms of acute internal parasitism.

(2) Ram lamb, well nourished; received no treatment. Nodules: About a dozen small nodules present. Stomach worms: Moderately numerous.

(3) Ewe lamb, well nourished; treated twice with carbon bisulphide in Carron oil. Nodules: About a dozen small nodules present. Stomach worms: Quite numerous.

(4) Wether lamb, condition poor; received no treatment. Nodules: One or two small nodules present. Stomach worms: Moderately numerous.

Check or control division in which neither ewes nor lambs had received any medicinal treatment:—

The three lambs originally occupying this division had all died previous to the examination of the others; the *post-mortem* findings have already been recorded.

We do not know that the terms used convey an intelligent idea of the number of stomach worms present in each case. These parasites are exceedingly difficult to count in a severe attack. We might say, however, that the numbers ranged from a few straggling ones, here and there, over the mucous lining of the stomach, as in the case of Ram Lamb No. 3, which was treated with the carbon bisulphide mixture in the experiment division of the bare lot, to a "seething mass" of the worms covering all parts of the mucous membrane, as was the case in Ewe Lamb No. 1, which received coal-tar creasote solution in the experiment division of the grass lot.

INFERENCES AND REMARKS.

The parasitic infection, both nodule and stomach worms, was doubtless introduced on to the lots by the purchased ewes.

The lambs were somewhat mixed as to breeding and quality, and a little irregular as to size and age.

All of the lambs, including controls, on the bare lot were in marketable condition, and the carcases were purchased by a leading local butcher.

Only two out of the four lambs on the experiment division of the grass lot were in condition for the market, and these were bought along with the bare lot bunch.

No losses occurred either in ewes or lambs (two of each) in the control division of the bare lot.

All of the ewes (three in number) and one lamb died in the control division of the grass lot, independent of the two lambs that had been destroyed by dogs.

One delicate ewe (out of four) died in the experiment division of the bare lot.

None of the four ewes died in the corresponding division of the grass lot.

None of the four lambs died in the experiment divisions of either the grass or bare lots. At the same time, all of those in the bare lot were in marketable condition when butchered, while only two of those in the grass lot were in condition for the market—one of the remaining two being in poor flesh, the other ailing as the result of acute internal parasitism.

Notwithstanding that all of the lambs were more or less infested with stomach worms, the uniformly good condition of those in the bare lot (both controls and others) showed that their health was little, if at all, impaired; while at least two of the experiment division grass lot lambs did not thrive sufficiently to be considered fit for the butcher.

On the whole, the lambs raised by the bare-lot method were, in every way, more satisfactory than those raised on the grass-lot.

As only one ewe died out of eight that had received medicine, it is thought probable that the treatment had a beneficial effect, both on the ewes and in preventing, to some extent, the transmission of infection to the lots, as none of the untreated lambs of the treated mothers had died up to the time of slaughter, while the three untreated ewes died in the control-division of the grass lot, although those in the bare lot division did not seem to suffer.

The effect of the few nodules found on the intestines might be considered as negative, so far as interfering with the nutrition and development of the lambs for market was concerned, as they were very small, and occupied but a minute area of the absorbing surface of the bowel.

The test, in these experiments, may be looked upon as a peculiarly severe one, on account of greater exposure of the lambs to grosser infection (due to the very restricted area of the lots) than would likely be found in practice on the farm.

From these and our previous experiments, it cannot be definitely stated that the "bare lot," as used by us, had any appreciable effect in preventing the lambs from obtaining stomach worms, although, in the case where both ewes and lambs were treated, and even where the mothers alone received medicine, the worms were considerably fewer in number than in the control lambs. The result was, evidently, largely due to the ewes being treated before being placed in the lots.

It is our opinion that no kind of lot or corral (so-called bare lot) where the ground surface cannot be kept absolutely free from dust or loose soil and fæces (droppings), will prevent lambs obtaining stomach-worms in some form: that is, where the infection exists, as was the case in our experiments—the worms having passed from the ewes—as we have frequently observed the lambs nibbling and "nosing around" amongst the dust and manure, even when not a spear of grass appeared to be present.

We are inclined to the opinion, although we have not yet made the test at this station, that the most satisfactory manner of dealing with the stomach worm problem would be a system of periodic rotation of pasture or other feeding grounds, combined with suitable vermicide medicines.

So far as we are aware, the bisulphide of carbon had not previously been employed as a vermicide in sheep; and from the use of only two doses each to two lambs, we are scarcely in a position to give a definite

opinion as to its efficacy, although we are inclined to think that it gave rather better results, in our case, than the coal-tar creasote, as may be seen by reference to the record of *post-mortem* examinations. We believe that carbon bisulphide is worthy of further trial in practice, but we must add a word of caution. This agent is very combustible, and must be handled with great care. The better method of preparing the mixture would seem to be to first add the bisulphide to the raw linseed oil and agitate the two thoroughly. Then add the lime-water, and again shake the whole until thoroughly amalgamated.

After administering this mixture to the two lambs and one or two of the ewes, it was observed to have what appeared to be a slight, temporary intoxicating effect, the animals holding their heads to one side, and in one or two cases a tendency to "buck jump," as it were. This may have been due, however, and we think it quite probable, more to the uncomfortable sensation produced in the more exposed part of the mouth and around the lips by the rapid evaporation of the bisulphide. As previously stated, the effect was only temporary, and we had no bad after-effects whatever in any of the animals so treated. This might be obviated by administering the bisulphide in a gelatine capsule, as has been done when giving this agent to dislodge "stomach bots" in horses, but we did not attempt this method in our experiments. We are inclined to think, however, that in the case of the sheep, medicines in fluid form are more likely to sooner reach the fourth stomach than when given as a solid, which the capsule would tend to represent. We mention this experience so that anyone trying the bisulphide Carron-oil mixture in practice might be prepared for the effects stated in some of the animals. It was also observed that when the drench was well given, and none of it forced forward in the mouth by the sheep, or smeared over the outside of the mouth and lips, very little, if any, of this effect was produced; which would rather indicate that it was due to the speedy evaporation of the bisulphide from the more exposed parts alluded to. The opinion here expressed with regard to the apparent efficacy of bisulphide of carbon is predicted solely upon our observations in these experiments, and not on its direct action upon the living parasites outside of the stomach. This we hope to take up later when an opportunity presents itself.

Neither the eight lambs nor their carcases were weighed on this occasion, but the butcher who purchased the latter pronounced their general condition favorably comparable to, and the quality of the flesh better than, any he had handled during the season.

THE FIGHT AGAINST BOVINE TUBERCULOSIS.*

BY DR. MIESSNER, OF BROMBERG.

CONSIDERABLE progress has recently been made in the treatment of bovine tuberculosis, as it is at last possible, by means of an immunisation process, to protect cattle against infection from bovine tubercle bacilli.

The various experiments in connection with the above are based on the fact first determined by Koch and Schütz, and now acknowledged by the majority of authors, that considerable difference exists between human tuberculosis (typus humanus) and bovine tuberculosis (typus bovinus), and that tubercle bacilli of human origin cannot, in most cases, be transmitted to cattle. Thus an immunising process was obtained, and von Behring was the first to prepare a vaccine, which he termed "Bovovaccine." This consists of dried human tubercle bacilli, of which first 4 mg. and three months later 2 cg. are injected into the veins.

At the same time Koch and Schütz, assisted by Neufeld and Miessner, occupied themselves in producing a vaccine which was placed on the market last year under the denomination of "Tauruman."

Tauruman consists of human tubercle bacilli, the innocuousness towards cattle and the important immunising power of which has been demonstrated by a great number of trials. It differs considerably from Bovovaccine, inasmuch as the tubercle bacilli are supplied in a perfectly fresh state, suspended in physiological salt solution, ready for use.

In order to obtain a thoroughly constant action, Tauruman should only be employed within the eighth day after its production. Bovovaccine, on the other hand, may be kept for four weeks. Naturally, after so long a period, the dried tubercle bacilli are subject to degeneration and a greater or less diminution of power.

According to the latest investigations, it has been shown that, in some instances, it is possible to render guinea-pigs tuberculous by means of a subcutaneous injection of Bovovaccine, and in other instances it is impossible. Consequently the effectiveness of this vaccine is subject to much variation.

The investigations of Eber, Lorenz, Schlegel, and Hutyra are the best proof, to my mind, that the vaccines employed were too weak, and therefore incapable of producing sufficient immunity in cattle.

In order to try to convince the above-mentioned scientists of the efficiency of his immunising process, von Behring sent them a number of immunised cattle. These received virulent bovine tubercle injections, and afterwards became more or less tuberculous. At a debate on this point, in February, 1906, before a meeting of the German Board of Agriculture, von Behring tried to explain these failures by saying that he was not fortunate enough, like others, to be able to carry on investigations at the expense of the Ministry of Agriculture, but that he was obliged to work at his own expense. His sheds not being large enough to contain all the cattle, he sent away those which had not proved an entire success, but which he considered capable of

* A Paper read before the Fortieth Annual Meeting of the Provincial Veterinary Association in Posen, on October 28, 1906.

being of use to others for interesting scientific investigations. Thus it happened that Schlegel, Lorenz, and Eber did not receive Bovo-vaccinated cattle, but principally, or in part, such as had previously been vaccinated with diluted bovine tubercle virus.

That von Behring should only submit cattle for which he was unable to find a place in his sheds, but which are supposed to be good enough for the experiments of others, whereas, in reality the very important question of immunity was to have been decided, are arguments which are scarcely likely to be taken seriously by an expert critically-judging public.

Contrary to the (in the majority of cases) very weak action of Bovo-vaccine, Tauruman causes a powerful reaction after intravenous injection (as shown in a large number of trials), and is followed by very considerable immunity against tuberculosis. This immunity is so great that vaccinated cattle stood an intravenous injection of 2 cg. bovine tubercle bacilli exceedingly well, and on *post-mortem* examination proved to be free from any tuberculous changes whatever; whereas control animals receiving the same amount of bovine tubercle bacilli died after twenty to thirty days of typical general miliary tuberculosis.

Further trials with Tauruman produced several more interesting points of great importance to a successful and expert vaccination. In the first place, it was proved that animals already infected by tuberculosis tolerate vaccination very badly, becoming more diseased in a short time, and finally succumbing. *It is therefore necessary to strictly warn against vaccination of animals already infected by tuberculosis.*

A second important point, first noticed by Marks, of Posen, in Bovo-vaccination, is that vaccinated animals which are kept in sheds containing cattle affected by bovine pneumonia, very often succumb to pneumonia after a very short period. At all events, the infection with tubercle bacilli virus produces an acute state of pneumonia in calves disposed to this disease. A similar influence of one disease on another has also been observed in swine erysipelas and swine pest.

Finally, a third and by no means unimportant point was observed, viz., that a certain amount of time passes before the desired degree of immunity is obtained after vaccination. This was proved experimentally by subjecting a number of healthy calves of the same age, treated with an equal amount of Tauruman, to a control infection with highly virulent bovine tubercle virus at different periods. The result was that those animals which received a control injection four weeks after vaccination, succumbed to acute miliary tuberculosis at the same time (*i.e.*, after about twenty to thirty days) as control animals simultaneously infected but which had not been vaccinated. Vaccinated animals receiving a control injection only after eight or twelve weeks, stood the same extremely well, and, on being slaughtered, proved to be entirely free from tuberculosis.

These experiments prove that the immunising bodies against bovine tubercle bacilli are only slowly developed in the systems of cattle, and that a minimum of *four weeks, at least*, is essential to their development. This point is of the greatest importance in vaccination, as one is obliged to protect vaccinated animals against infection from bovine tubercle bacilli for at least three months after vaccination.

To sum up, the following points must be strictly observed for the successful employment of Tauruman:—

Vaccinated cattle must be—

(1) Free from tuberculosis.

(2) Free from bovine pneumonia.

(3) Kept free from infection with bovine tubercle bacilli for a period of three months.

Comparing Bovovaccination with the above, it is worth while to ask whether similar points are to be observed.

It must not be forgotten that von Behring did not originally put forth a similar claim. In the rules for vaccination in the Grand Duchy of Hessen, endorsed by His Excellency, von Behring, rule No. 3, states that only such animals as are free from apparent indications of disease are to be subjected to vaccination between the ages of from three weeks to four months.

The tuberculin test prior to vaccination is quite superfluous in healthy animals at this age, even if they belonged to a herd notoriously infected by tuberculosis.

By means of minute *post-mortem* examination of calves that had sickened and finally succumbed after Bovovaccination in the province of Posen, I was frequently able to convince myself that these animals were infected, by the fact that there were calcareous tuberculous changes, the age of which most certainly dated back to a period prior to vaccination. In addition to these, they only showed signs of general marasmus, effusions in the body cavities, cachexia, and, occasionally, icterus. Others had similar experiences with Bovovaccine, but von Behring sets their failures down to a faulty vaccination.

If Ebeling was unable to register a single failure in his vaccinations in Mecklenburg, this was probably due to tuberculosis not having spread among his cattle owing to favourable hygienic conditions.

More recently, however, von Behring seems to admit, without reserve, that calves should be free from tuberculosis before vaccination. At least, one may arrive at this conclusion from his lecture before the Board of Agriculture in Berlin, July, 1906. This paper is published by the author in his work, "Modern Phthiogemological and Phthiotherapeutical Problems from a Historic Point of View," Marburg, 1906, on page 115 of which he states:—As regards the time necessary for a radical extermination of bovine tuberculosis, I am not as sanguine as the Belgian Government veterinary surgeons, who, after a trial test which proved successful, have spread the report, through the daily Press, that according to their opinion bovine tuberculosis will in a few years be exterminated by means of Bovovaccine. I cannot be so optimistic in view of my own personal experience, and I have never given cause for such delusive hopes. I will even take this opportunity of maintaining that it would be a great mistake to assume that every Bovovaccinated calf would grow up into a cow free from tuberculosis, and give milk which is entirely free from tubercle bacilli.

This would certainly not be the case where vaccination has been applied to herds badly infected by tuberculosis, where the calves are already infected previous to vaccination, or possibly already possess tuberculously infected areas.

As regards pneumonia, Marks first discovered the detrimental action of vaccination on this disease in calves treated with Bovovaccine. Consequently our statements referring to the vaccination with Tauruman of calves suffering from pneumonia are equally applicable to Bovovaccine.

The third observation, that the immunisation bodies are only slowly developed in the organism of calves after vaccination, is endorsed by von Behring in the same paper. He puts down the fact that Hutyra was able to find a fresh tuberculous disease in Bovovaccinated cattle, after a control injection of bovine tubercle virus, to his (Hutyra) subjecting cattle to a control injection too soon after Bovovaccination. On page 120 of the above-mentioned paper von Behring states as follows: "The test of immunity by means of arbitrary infection with bovine tubercle virus, should not be carried out after a few weeks or even months, but much later." From the above it will be seen that the same rules apply equally to Bovovaccine and Tauruman if vaccination is to be successfully carried out. The great advantage of Tauruman over Bovovaccine, quite apart from the surer protection it conveys, lies in the fact that Tauruman is supplied ready for injection, and that one injection suffices to render cattle immune.

From a practical point of view, the treatment with Tauruman is considerably more simple and practical, of which fact anybody trying both methods is readily convinced.

The pounding of tubercle bacilli takes up a length of time, and even with the greatest care it cannot always be correctly performed, added to which is the danger easily arising to the operator and his surroundings, owing to the bacilli becoming scattered.

Finally, from a hygienic point of view, it certainly is not immaterial whether an intravenous injection of human tubercle bacilli is carried out once, as with Tauruman, or twice, as with Bovovaccine. These are very essential simplifications which readily induce one to give preference to Tauruman over Bovovaccine.

I will not omit to draw attention here to the great advantage, prior to intravenous injection, derived by cutting off a particle of the skin held by a forceps in the manner suggested by Marks. This does away with the necessity of shaving off the hair, or of disinfecting the part, and finally, it simplifies the insertion of the needle into the vein by eliminating the necessity of first piercing the skin. The loss of a piece of skin about the size of a sixpenny piece is of no consequence as compared to the advantages of this method.

After demonstrating above the necessity of selecting cattle free from tuberculosis in order to obtain successful immunisation, I shall now endeavour to show the most rational manner of raising a breed of cattle free from tuberculosis in practice.

The carrying out of this maxim is, without a doubt, beset with difficulties, but that these are not insurmountable is proved by the fact that cattle free from tuberculosis are already raised in many parts. Especially in East Prussia cattle have, for some years now, been reared free from tuberculosis in connection with Ostertag's method of exterminating tuberculosis.

I am indebted to the courtesy of my colleague, Mr. Müller, of Koenigsberg, for having been able to convince myself of this. Whereas formerly, owing to the statements in all the journals referring to this matter, I was of the opinion that all the calves in this district were fed on milk heated to 85° C., this is certainly not the case to-day. The objections against heating the milk which one meets with there, and which have also been put forth in the province of Posen, are as follows: On the one hand, it is very difficult for owners

to heat several hundred litres of milk to 85° every day; on the other, calves do not tolerate heated milk very well; they do not thrive well on it, and are very prone to disease, especially dysentery. Especially the last objection is not to be despised, as we all know that enzymes and bacteria, which play an important part in digestion, are destroyed by heating milk. Besides this, the uncleanliness of the staff, who are anything but scrupulous in cleansing of pails, &c., must be taken into consideration. Owing to this, one refrains from heating the milk nearly all over Eastern Prussia, and young calves which are separated from the mother-cow within twenty-four hours after birth are reared mainly on the milk of "nurse-cows." "Nurse-cows," according to Müller (Koenigsberg), are such in which no signs of tuberculosis could be traced by clinical research. This method could easily be introduced into Posen, where calves are reared apart from the mother-cows from a short time after birth. In such cases it would be essential that the calves should not get the milk of their mothers, but of nurse-cows. Unfortunately this separate rearing of calves is not very much in vogue in Posen; in the majority of cases it is usual to keep calves from four to six weeks with their mothers, and then to wean them. Only very few farmers who rear their calves in this manner can be induced to separate the calves from the mother. They say that the scarcity of farm hands, and, above all, the unreliability of same, are the chief reasons for this. The latter reason is certainly justified, because the average farm labourer in Posen is of much lower standard than in any other province. Being obliged to take this into consideration, I have introduced a modification adapted to the conditions existing in Posen, without, however, endangering the principle of breeding free from tuberculosis. My plan is to keep the nurse-cows in a separate shed, which has previously been thoroughly disinfected, and which is so shut off from the other sheds that the calves in the nursing shed have absolutely no connection with the rest of the cows. This method may be carried out by anybody without difficulty.

One important question remains to be answered, and that is, How are we to obtain nurse-cows? My colleague at Koenigsberg, Mr. Müller, employs such cows as have been proved to be free from open tuberculosis and whose milk is tested at certain periods by microscopical and animal tests for the total absence of tubercle bacilli. I have the greatest admiration for the industry and dexterity with which my colleagues in East Prussia are endeavouring to root out all tuberculous animals, but we must not shut our eyes to the fact that by this method only a part of the animals infected by open tuberculosis are discovered, viz., those animals in which the tubercle bacilli have already caused considerable organic changes. All other cases, especially those at the early stages of tuberculosis, which also discharge tubercle bacilli, but where the organic changes caused by the bacilli are only very slight, we are not able to diagnose.

We cannot, therefore, maintain in each individual case that the milk of nurse-cows is entirely free from tubercle bacilli. Therefore I consider it more correct to carry out the tuberculin test together with the clinical investigation when choosing nurse-cows. I work on the following lines:—

Each cow of one herd is subjected to a thorough examination in a

similar manner as practised by the East Prussian Veterinary Association, and those animals suffering from open tuberculosis are eliminated. For this purpose the secretions and excretions are submitted to the Veterinary Institute for examination. The milk of tuberculous animals is debarred from further use, and the animals are slaughtered at the earliest opportunity. By these means one is at the same time able to clear the sheds of the worst purveyors of tuberculosis and to obtain milk without a blemish, from a hygienic point of view. Those animals showing no trace of tuberculosis are now subjected to the tuberculin test. Hereupon all those showing no reaction are put in a special division of the shed, together with calves which have been separated from their mothers twenty-four hours after birth. Here the young animals remain from four to six weeks and are then placed in the calves' shed, which is generally entirely separated from the cows' shed, when they receive no more milk. In this manner it is relatively easy to rear calves free from tuberculosis.

This method of rearing calves free from tuberculosis, besides giving us a guarantee that vaccination will prove successful, has another great advantage, inasmuch as we are not obliged to use the injection immediately after birth, but are able to wait until a greater number of calves are ready for vaccination. Besides reducing the cost of vaccination, this has the great advantage that, in sheds containing calves suffering from pneumonia, vaccination may be postponed until all the animals have been attacked by pneumonia or all risk of their getting same is over.

Formerly, according to von Behring, this procedure would have been impossible, as one feared that calves would become infected by tuberculosis during this period. Experience having taught us that contagious pneumonia of calves only attacks them during the first three months of their lives, we should advocate employing Tauruman in sheds containing calves suffering from this disease at the earliest three months, or even longer, after birth. To form a decided opinion on the success of vaccination it would be necessary to collect the reports of *post-mortem* examination of a large number of vaccinated cattle. This, under ordinary circumstances, would only be possible in a limited number of cases, as one is rarely able to trace the fate of an animal beyond a year's time. In order to obtain as much information as possible, re *post-mortem* examinations, I mark all cattle and ask all colleagues to take note of my marks and send in their reports to the Veterinary Institute of Hygiene. The marks consist of letters and numerals marked on discs attached to the ears, PT or PB, with the respective year, thus—PT 6 would signify " vaccinated in Posen with Tauruman during the year 1906."

To sum up, the immunisation method is as follows :—

(1) Each cow in one herd is subjected to a thorough examination —those suffering from open tuberculosis are slaughtered as soon as possible.

(2) These having been eliminated, the rest are subjected to the tuberculin test in order to select those cows which are to serve as nurse-cows.

(3) The nurse-cows to be kept in a special division of the shed, entirely separated from the rest of the animals.

(4) All calves to be separated from their mothers on the second day after birth.

(5) The calves are either to be fed in a separate shed with nurse-cows' milk or to be kept in the nurse-cows' shed.

(6) Vaccination of calves to take place during the first three months.

(7) In sheds where pneumonia exists only calves over 3 months old are to be vaccinated.

(8) All vaccinated calves to be kept isolated for a period of 3 months after vaccination.

(9) Each vaccinated calf to have a disc attached to its ear containing the letters PT, together with the respective year, or other signs to enable them to be identified.

UNIVERSITY OF LONDON.

PRELIMINARY EXAMINATION IN VETERINARY SCIENCE (FOR INTERNAL AND EXTERNAL STUDENTS), JULY, 1907.

Examiners. Inorganic Chemistry: Prof. A. W. Crossley, D.Sc., Ph.D., F.R.S., and Alexander Scott, Esq., D.Sc., M.A., F.R.S. Experimental Physics: Prof. J. S. Townsend, M.A., F.R.S., and Prof. H. A. Wilson, D.Sc., M.A., F.R.S.

PASS LIST.

Inorganic Chemistry and Experimental Physics: (2402), Sheather, Alfred Leslie, Royal Veterinary College. Experimental Physics only: (2401) Horton, Frank Fielding, Wilson's Grammar School, Camberwell.

FACULTY OF SCIENCE. GENERAL INTERMEDIATE EXAMINATION IN VETERINARY SCIENCE (PART I.) FOR INTERNAL STUDENTS, JULY, 1907.

Examiners. Veterinary Anatomy: O. C. Bradley, E. S. Shave. Organic Chemistry: A. W. Crossley, Alexander Scott. Biology: J. Reynolds Green, J. G. Kerr, W. H. Lang, E. A. Minchin.

PASS LIST.

(2452) Thompson, Leonard, Royal Veterinary College.

Clinical Articles.

DENTIGEROUS CYST IN A FOAL.

BY C. W. TOWNSEND, M.R.C.V.S., LONG STANTON, CAMBRIDGE.

THE subject was a Black Shire Filly, aged 9 months. My attention was first drawn to a swelling about the size of an orange, situated in upper part of the temporal fossa near to the base and front of the off ear. Upon examination I discovered a small hole upon the outer surface of the conchal cartilage, about midway between the tip and the base, and manipulation of the swelling caused a profuse discharge of pus from the opening, thereby proving that a connection existed between the two lesions. Passing a probe down the canal as far as it would go without exerting any undue pressure, its point came in contact with something hard; this I diagnosed to be a foreign body of some kind. With the owner's consent I decided to operate to deter-

mine the cause of this abnormality, and after washing, disinfecting, and removing the hair from the area, I made an elliptical incision into the swelling in the temporal region. A quantity of white creamy pus exuded from the opening, and further examination of the interior of the cavity revealed a hardened body, the latter being enclosed in a thin membrane firmly attached by its base to the underlying structures, this making its removal a matter of some difficulty. After removal I thoroughly scraped the area of attachment with a curette, then washed out the cavity with a weak solution of iodine. I now turned my attention to the sinus leading to the ear, which I thoroughly cleansed. The wound did not require much after-treatment, and a small scar is all that remains to mark the seat of the original lesion.

I enclose a photo of this dentigerous cyst, which in shape, size, and structure is not unlike a molar tooth and measures barely 2 inches in

length. The small piece (marked with a cross) was at time of removal only half attached to the main cyst at its free end, and this portion very much resembles the so-called Wolf's tooth.

Remarks.—I have never met with one so large before, and I believe their occurrence in equines is somewhat rare. No doubt the cyst was congenital and the temporal swelling would have broken in time spontaneously, but it seems rather peculiar that the formation of pus should have been so slow.

INTUSSUSCEPTION OF THE ILEUM. PROCTOPEXIA AND RECOVERY.

BY F. J. TAYLOR, M.R.C.V.S., MOSELEY, BIRMINGHAM.

THE patient was a pedigree fox-terrier dog puppy, aged eight months.

History.—Catarrhal diarrhœa of a persistent character for about a fortnight, appetite good, no vomiting or stomach symptoms, and entire absence of respiratory catarrh, and the puppy did not appear to owner to have any abdominal pain further than a constant desire to empty the bowels.

Symptoms.—When brought for treatment the bowel was prolapsed about 8 inches, and was in a congested and cold condition. When cleansed and returned, *per rectum*, the intussusception could just be felt on the point of the finger; the bowel remained in position only a short period after being returned. Owing to the constant straining at each evacuation the length of bowel increased.

Treatment.—External removal by operation was deemed impracticable, as the rectum itself was not implicated.

Laparotomy was performed under A.C.E. mixture, and the abdomen opened under antiseptic conditions in the posterior median line. The intussusception was reduced by gentle mechanical traction, and the bowel sutured to the abdominal wall by three sterilised gut sutures. The bowels were then carefully inflated with a warm, oily enema, which was pressed through the lately intussuscepted portion by the fingers before closing the abdominal wound, thus removing a quantity of catarrhal mucus and primary adhesions. The abdomen was closed with Lembert's and external interrupted satures, and a supporting bandage placed in position. Salicylate of bismuth and chlorodyne were given internally, and a mucilaginous diet, together with an occasional dose of warm olive oil, completed an uninterrupted recovery.

A CASE OF RANULA IN THE HORSE.

BY C. AGGIO, M.R.C.V.S., OTLEY.

I HAVE a valuable huntress, and on August 16 my groom informed me that she was slobbering at the mouth and could not eat; I had seen her myself three hours previously, when she was all right.

On examining the mouth, I found a large jelly-like swelling on the off side of the frænum of the tongue. I washed the mouth out with chinosol lotion, and gave a 5-dram dose of physic, thinking it might

be of a septic nature, but I did not find any wound on the tongue or in the mouth. She become considerably worse towards evening, and there was swelling of the tongue and lips. I at once made a bold incision of the swelling under the tongue, and after cutting into it found that the exuding contents were like jelly. I again washed her out with chinosol lotion, which seemed to relieve her. The next morning she was considerably better, but during the day she got worse, the tongue protruding and being enormously swollen. I then made an incision from the base of the tongue to the apex, and in the course of a few hours she seemed to be considerably relieved. I continued to wash the wound with boracic acid and glycerine, and she is now all right, fourteen days from commencement.

After my twenty-seven years' experience in practice, I have never come across a similar case, although I believe it is not uncommon in medical practice.

TWO INTERESTING OUTBREAKS OF VEGETABLE POISONING.

BY C. AGGIO, M.R.C.V.S., OTLEY.

Hemlock Poisoning.

I RECEIVED a message on May 3 informing me that an owner had a yearling heifer which had been very weak in its hind quarters for a few days and had diarrhœa, with a considerable amount of clotted blood. On my arrival I found her lying down, with eyes sunken, and dying. I was informed by the owner that he noticed two others that morning to have a staggering gait in the hind quarters. I went down the field and examined them, and came to the conclusion that they were poisoned. On examining the field I noticed an enormous amount of hemlock just coming out into flower, and a great quantity had been eaten by the heifers. I might mention that the owner had bought fifteen yearlings from Ireland and put them in this pasture, and it was the next day after being in that he noticed the first one, which was the smallest and poorest, was amiss. I had them at once moved into a fresh pasture.

Treatment.—Tannic acid and glycerine night and morning. In the course of a few days they all recovered.

Laurel Poisoning.

I was requested on April 6 to make a *post-mortem* on two ewes in lamb. The farmer informed me that he noticed the ewes had been off their feed for some days; they had been vomiting and were unable to rise, and that he had several more that did not look quite right.

Post-mortem revealed inflammation of the stomach; the cuticular portion could be removed as if it had been scalded. I journeyed over and examined the remaining ewes and pasture, but could not detect anything that could have produced the symptoms. A gentleman's residence was at one end of the field, and I found the gardeners had been trimming the laurels, and thrown the cuttings into the field, of which the ewes had no doubt freely partaken.

Treatment.—Linseed oil, oatmeal gruel, and whiskey. Not being able to find anything in any text-book on the subject, I thought it might be of some interest. I may mention that nine ewes died.

Reports.

IMPERIAL CANCER RESEARCH FUND.

REPORT OF DR. E. F. BASHFORD, GENERAL SUPERINTENDENT OF RESEARCH FOR 1906-7.

THE wide range of research has been maintained as in previous years, but the hopes of advancing knowledge of cancer have become more and more centred in experimental investigations. The experiments on living animals continue to be controlled and the results supported by comparative biological and statistical investigations. During the past year we have learnt from experiments more of the nature of the local and of the constitutional conditions associated with the origin of cancer, and we have been able to form more definite conceptions of the nature of the change responsible for the rapid multiplication of cancer cells.

THE STUDY OF THE CIRCUMSTANCES ASSOCIATED WITH THE SPONTANEOUS APPEARANCE OF CANCER.

The thanks of the Executive Committee are again due to the Foreign, India and Colonial Offices for the continued incentive given to the collection of data within the areas under their jurisdiction, as well as to the Governments of India, Egypt, Cape Colony, Natal, and other dependencies.

The statistical investigations have been continued in the London and Provincial Hospitals, in India, and in various colonies and protectorates. During the past year 1,282 fresh cases have been reported from the London Hospitals, and 392 from Provincial Hospitals.

Of 1,806 cases of cancer which up till now have been reported from India, in 1,513 persons cancer affected the surface of the body, and only in 76 affected internal organs: 335 occurred in persons living on a vegetable diet, and 608 in persons living on a mixed diet, mainly flesh.

Isolated reports have been forwarded by individual investigators, from India, from the colonies, and from the protectorates, to which full justice will be done when the statistics of the ethnological distribution of cancer are considered in detail. Reports of careful investigations have been forwarded from Natal by Dr. Watkins Pitchford, from Tasmania by Dr. I. G. L. Elkington, from Ceylon by Sir A. Perry and Dr. Chalmers, from Egypt by Dr. Keatinge and Professor Ferguson, from Kashmir by Dr. Neave and Dr. Rawlence, and from Basutoland by Dr. Long.

Statistical investigations have arrived at a point at which experiment has become essential in order to solve definite problems relating to the incidence of cancer, which statistics alone are unable to decide. Up to the present the investigations have revealed very considerable differences in the numbers of cases recorded in various races of mankind. Some of these differences are only apparent; to determine whether or not others are real requires more prolonged investigation, *e.g.*, as to the longevity of the inhabitants of Tasmania, which may possibly account for the fact that cancer of the lip is so very frequent in the returns from that colony.

Although a basis for accurate statistical comparison is still wanting, it is of interest to find that the incidence of cancer as recorded for different sites of the body varies, so that cancer of particular sites preponderates in the records and specimens of the cases of cancer forwarded from particular regions. Thus melanotic sarcoma in the native races of Africa has been frequently reported, and always as arising on the soles of the feet. For India the returns refer mainly to the surface of the body, and in the case of Kashmir, epithelioma of the anterior abdominal wall occurs with a constancy met with nowhere else. The limited anatomical distribution of the disease in other native races, *e.g.*, in Mahommedans, Tamils, and Sinhalese, is well illustrated in a special report from Ceylon.

The recorded cases are again limited to definite areas of the body, and are in direct association with peculiarities in the habits of these races. Peculiar forms of local chronic irritation—associated with native customs or religious rites—are reported to affect those portions of the body which correspond to the sites on which the majority of the cancers are recorded. The relation of these different forms of peculiar chronic irritation to the occurrence of cancer in other parts of the world, is paralleled by its association with similar, as well as quite different, forms of irritation at home, as, for example, in chimney-sweeps' cancer, paraffin and arsenic cancer, X-ray and burn cancers. The mediate relation between chronic irritation and cancer has been emphasised in previous reports.

The development of cancer in tissues which have suffered direct injury, *e.g.*, fracture of bone, illustrates the same mediate relationship, as does also the development of cancer in tissues which have long been the seat of chronic disease of recognised infective nature, *e.g.*, some forms of keratosis linguæ and lupus. In these cases the specific organisms seem to play a part analogous to that of the physical agents referred to above.

Cancer is universal in vertebrate animals which, while escaping the effects of many of the chronic forms of irritation affecting man, suffer from other external irritants. No one form of external agency is constantly associated with the development of cancer. Hence it is futile to seek for a hypothetical something common to all the external agencies associated with cancer. On the contrary, it is more profitable to search for the common intra-cellular change which, in conformity with the biological similarity of cancer throughout the vertebrates, must intervene in the transformation of normal into cancerous tissue. Since there is still no evidence necessitating or even justifying the assumption that the disease is communicated from one person to another, the search for the clue to cancer in any one species of animal must take account of possible peculiarities in the individual beings which are attacked, and in those which escape. Hence the questions of individual and of family liability have received still greater attention during the past year.

Dr. Wm. Ogle, in the Registrar General's Report for 1889, stated that one out of twenty-one men, and one of twelve women reaching the age of 35, eventually died of cancer. From Dr. Tatham's most recent figures of national mortality in the Registrar General's Report for 1905, it has been calculated, by using Dr. Ogle's method, that, on an average, the chance that a man who reaches the age of 35 will event-

ually die of cancer is one in twelve,* and the chance that a woman who reaches the same age will eventually die of cancer is one in eight. The chances of dying of cancer for the two sexes, as calculated from the national figures, are therefore approximating. As stated in previous reports, the recorded frequency of the disease differs from its absolute frequency, but it is unprofitable at present to discuss the question of the real or apparent increase of cancer, until the additional data which, with Dr. Tatham's collaboration, are accumulating, justifies its being done. It is to be noted, however, that cancer as a cause of illness is rare when compared with the frequency of illness from infective diseases which are important causes of death, *e.g.*, tuberculosis, pneumonia, enteritis. This is due to the exceptionally high case mortality of cancer, so that the number of deaths represents very nearly the total number of cases observed. The following table shows how often, taking the above proportions, no death, or one, two, three, &c , deaths from cancer may be expected to be recorded in 100 families, half the numbers of which are men and half women, no hereditary tendency being assumed, and excluding all persons dying under 35 :—

Number of cancer deaths in family	Per 100 families of six members, viz : three men, three women	Per 100 families of eight members, viz., four men, four women	Per 100 families of ten members, viz., five men, five women
None	51	41	33
One	36	39	39
Two	11	16	20
Three or more	2	4	8
	100	100	100

The frequency of cancer as a cause of death is so great that few families of large size escape. Nevertheless, cancer plays but an insignificant part as a cause of mere illness, compared with diseases of known infective nature.

The great frequency of cancer as a cause of death, as revealed by the above figures, requires to be further analysed. From the national mortality figures above quoted for 1905, in one or two cases either a parent or a grandparent will, on an average, have died of cancer, supposing such parents and grandparents to have died after 35 years of age. Suppose a man and wife, both of whom died of cancer sixty years ago; further suppose that of their children, three males and three females, all survived and married, and that two of them, one male and one female, married children of parents who died of cancer like their own parents, while the others married into families with no history of cancer. Were it possible to follow the fate of all decendants of these six families, the comparative frequency of cancer in those of double cancerous heredity † and in those of single cancerous heredity would show whether a tendency to the disease is transmitted. It is evident that such observations would have to be continued for many years, until the descendants should become numerous enough to exclude the

* Really two in twenty-three.

† The term "heredity" is merely used for convenience, without prejudging the problem which is under discussion.

fallacies inherent in small numbers, or that they should be multiplied by investigations on a large number of families with similar histories. In any case, the observations could not be completed within the lifetime of one generation of investigators.

Were such detailed analyses practicable of the incidence of cancer in a large number of families, and if they showed great variations above and below the average given in the preceding table, the probable existence of a family susceptibility would be enhanced. In man such an analysis is impracticable because of the length of life and low fecundity, and because of the progressive alteration in the value to be attached to records of the occurrence of cancer. Resort to experiments is necessary in order to define more accurately the circumstances associated with the spontaneous appearance of cancer.

Experimental Investigations.

The difficulty above referred to can be obviated in the case of short-lived animals. In the mouse it is now in a fair way to a definite settlement by means of breeding and in-breeding experiments on a large scale. As in man, so in the mouse, the total number of cases of cancer occurring in different strains varies. The disease has been so frequent as to lead some observers to assert the occurrence of epidemics in certain cages. Our prolonged investigations have given no support to this interpretation of the apparent greater frequency of cancer in some communities of mice as compared with others. The surgical removal of spontaneously occurring tumours has enabled us to prolong the life of many mice, and to breed from them. In this way we have obtained mice of a known cancerous parentage. By successively crossing other spontaneously affected animals with the offspring of cancerous parents, strains are being obtained in which the cancerous heredity is $\frac{1}{2}$, $\frac{3}{4}$, or $\frac{15}{16}$, and even higher. This concentration of a hypothetical hereditary factor in a known amount, and in large numbers of animals of known age, should in the course of a few years definitely settle whether there is a family or only an individual liability to the disease. At the same time, mice of known cancerous stock may be indispensable to further attempts to produce cancer experimentally, *e.g.*, by the artificial application of external agencies having a mediate relation to its spontaneous appearance. All attempts to produce cancer experimentally have thus far failed in animals chosen at random. The need for this line of research is pressing, because the advance in knowledge obtained by the experimental study of the growth of cancer, has arrived at a stage which makes it profitable to undertake the renewed study of the problem of its origin. As we have frequently pointed out, the origin of cancer is something entirely different from its continued growth, either in spontaneously attacked or in inoculated animals. The resemblance between the continued growth of spontaneous and of inoculated cancer is, however, very close. The origin of cancer must be studied in spontaneous cases.

Other experimental investigations have been conducted by Drs. Murray and Haaland and Mr. Bowen along the same lines as heretofore, with results confirming and extending those already recorded. Those meriting special attention still refer to cancer in mice. Only a general *résumé* will be attempted here, because the experimental investigations are of necessity becoming increasingly technical as we

advance more deeply into the relations obtaining between tumours and the animals bearing them.

Forty-eight additional spontaneous tumours in mice have been added to those previously studied. The tumours successfully propagated now number forty, and include two fresh groups, viz., certain carcinomata of the mamma with a great tendency to hæmorrhage, and certain squamous-celled carcinomata. Dr. Murray, Dr. Haaland, and Mr. Bowen have now propagated hæmorrhagic tumours with a degree of success surpassing what we had previously obtained. These tumours are the most frequent form of cancer in the mouse. Other investigators have, however, failed to propagate them. Their continued propagation affords an unequalled opportunity for the study of the histological differentiation of the cells characteristic of mouse cancer, and also of the connective tissue and vascular reactions which, as we have frequently pointed out, are of prime importance in the growth of transplanted cancer. The squamous-celled carcinomata are also of particular interest, in that their truly carcinomatous nature admits of no question, disposing once and for all of the objections which have been raised to investigations based on other tumours of the mouse. One of the squamous-celled carcinomata referred to is easily propagated, and is being exhaustively studied by Drs. Murray and Haaland. The same fluctuations in the energy of growth, already described for other carcinomata appear when observations are made over long periods with these two new groups of transplantable tumours. The probability of their fundamental importance is thereby greatly increased. From the fact that the fluctuations in the rate of growth are accompanied by definite histological alternations, it is hoped that their further study may throw fresh light on the nature of cancer and its mode of origin. In consequence of the light these fluctuations in the growth of transplanted cancer appear to throw on the alternation of periods of remission and exacerbation during the course of cancer in man, it may be advantageous to make permanent graphic records of the progress of cancer in the human subject.

The experiments yield yet further evidence that the growth of cancer consists of a succession of phases of increased and diminished energy of assimilation and growth. This evidence has been obtained by using the normal mouse organism as an indicator of the energy of growth of the tumour cells. Thus we have been able for the first time to compare the energy of growth of cancer with that of normal tissues, embryonic and adult. Further, different spontaneous tumours have been compared with one another by their behaviour in the same soil, viz., that provided by large numbers of normal mice. Comparisons cannot be made between two spontaneous tumours as they grow in the animals primarily affected, for their behaviour in the primary animals is determined partly by idiosyncrasies favourable to continued growth in the animals themselves.

As regards animals naturally suffering from cancer, it has been shown that the continuation of growth is only exceptionally obtained when their tumours are transplanted either into themselves or into other animals naturally suffering from cancer. The results speak for a greater suitability of the soil provided by individual mice, but not for a greater suitability on the part of all mice, which are naturally the victims of cancer.

It has thus been shown that the enormous proliferation of some propagated cancers is exceptional, being the highest degree of proliferation in a series of observations in which the lowest degree does not excel that of normal tissue. Further, that all tumours capable of propagation do not progress to a common condition, but present permanent histological and biological characters within the limits of the fluctuations already mentioned. These observations indicate initial permanent differences in degree between the parenchyma cells of different tumours.

Mouse cancer cannot be grown continuously in animals of different species. With all the tumours that have been so tested, only a temporary proliferation has been obtained even in rats, which are so nearly allied to mice. Attempts to cultivate tumour cells ontside the body, even in the organic fluids of the mouse, have proved fruitless, and it is only in the responsive living environment of the mouse's body that the vitality and peculiar energies of the tumour cells manifest themselves.

This response is partly local and partly general. The local reaction consists in furnishing the vascular and supporting structures necessary to convey the food supply. One aspect of the general response, first observed by us in collaboration with Dr. Cramer, has been carefully investigated by Dr. Monckton Copeman, F.R.S., and Dr. Hake on the stomachs of 700 mice, which we have gladly prepared and supplied from the laboratory. They have demonstrated that the cancer cell, growing in a previous normal mouse, induces an increase in the amount of physiologically active hydrochloric acid during digestion. This increased digestive activity is necessary to furnish food-stuffs for the rapid building up of protoplasm in the tumour which develops. It is a remarkable fact, throwing a most instructive light upon the relations subsisting between the transplanted tumour and the normal animal, that a fragment of tissue no bigger than a pin's head at the time of its introduction is able to influence the whole economy of the normal animal in this way. At the time of its introduction this little bit of tumour tissue lies free in the tissues of the host like any other foreign body; but it is speedily able to establish organic union with its host, and to impress its needs for food on the entire animal. This fact, and others detailed below, prove that the tumour cells are really cells of the mouse, and can compete and do compete successfully with other cells of the mouse for the food-supply. They are able to do this by their higher energy of assimilation, which is one expression of the different biological character of the cancer cell as compared with the normal cells of the mouse into which they have been implanted.

It is at least probable that the continued growth of spontaneous tumours stands in the same relation to the tissues of the mice attacked. Should the compensatory increase in digestive activity be insufficient, as in young animals, the general nutrition suffers, and an analogous relation may explain certain cachectic states occasionally met with in mice spontaneously attacked.

The favourable conditions for growth presented by normal mice can be altered to the disadvantage of the tumour cells so that they are unable to proliferate. These changes have been demonstrated by using the growth of the tumour cells as an indicator of changes in the animals. It has now been amply demonstrated that the soil is rendered

unsuitable for growth (*a*) when a mouse has recovered from a previous successful inoculation of cancerous tissue of its own species, (*b*) when previous inoculation has not been successful, but has led to the absorption of cancerous tissue, (*c*) after a previous inoculation of normal mouse blood, (*d*) ill-health in a mouse, in consequence of infective disease, in which, as is well known, digestive activity is depressed, hinders the growth of cancerous tissue when inoculated. The active agent in inducing the protection mentioned under (*c*) is the corpuscles, injections of serum having no effect. On the contrary, the growth of cancer in mice has not been inhibited by inoculating the cancerous tissues or the blood of other species.

We have found that the protection conferred by the spontaneous absorption of tumours which had grown for a time, is most efficient against subsequent inoculations of tumour tissue from the same strain as that which had been absorbed. The protection is less for tumours of a different strain, and may even be wanting. The degree of protection conferred stands in no relation to the success with which a tumour can be propagated.

The degree of protection against any one strain of tumour is proportional to the amount of that tumour which has been absorbed. The influence exerted by the absorption of tumour tissue is also shown in another way. In parallel series of experiments the tumours at first developing in normal animals may disappear without exception if 0·1 grm. of tissue was the amount introduced into each animal, while those tumours developing when half this amount of tumour tissue was introduced continue to grow progressively. A certain amount of tissue is absorbed after every inoculation, whether successful or not. When the amount introduced is excessive, the amount of absorption may influence the continued growth of the cells which survive.

The experiments performed to elucidate the nature of the protection conferred in these ways, and a discussion of the processes by which the grafts are prevented from growing in protected animals, will be found in the papers already published. The experiments are being continued and cannot be described suitably within the limits of this report. The results differ from anything occurring in the known infective diseases. It is fallacious to compare the protection induced in mice by the inoculation of cancer, to that following vaccination against infective diseases.

Mice which apparently have been completely protected against the inoculation of cancer have developed the disease spontaneously. Our methods for protecting mice only prevent the grafts from taking, and we are still unable to hinder growth once the grafts have taken and organic union with the host has been established. The fact that cancer has developed spontaneously in animals which were completely protected against the inoculation of grafts, points to the probability that the organic union between the tumours and the animals attacked was established from the very beginning of the disease.

The mere possibility of propagating some tumours continuously, while under similar conditions others present a graduated series terminating in those which cannot be propagated at all, permits the conclusion that in cancer a biological alteration of cells, varying in degree from one tumour to another, has taken place. The fact that the protection produced by mouse cancer and by mouse tissue is not produced by cancer or tissue of other species of animals, shows that

the cells implicated are mouse cells, having nothing in common with the cells of the cancers of other animals except their mode of growth. The specificity of the protection conferred by each variety of mouse cancer, maximal against itself, and less or absent against other mouse cancers, shows that the initial change is intracellular, leading to an alteration in the assimilative energy of the cell without necessarily obliterating the histological and other biological characters of the cell which has become cancerous.

The cancer cell of the mouse is really a cell of the mouse organism requiring the same kind of connective tissue and blood supply and the same food as the tissue cells of the normal mouse. The only differences it exhibits from the normal cells are qualitative ones, *e.g.*, in the powers of assimilation and growth. In consequence of the activity and the delicacy of its assimilative powers, the cancer cell is very much at the mercy of subtle changes in the animals providing its nutritional environment until the grafts have taken and become vascularised. It is by modifying the environment that it has been possible to prevent the growth of the cancer cell. The cancer cell is dangerous because its assimilative energies are higher than those of the other cells of the animal in which it is growing. The extreme delicacy of its nutritive requirements also makes it vulnerable. It seems probable that the protection noticed in mice is due to failure of the host to provide the necessary blood supply supporting structures and food, without which the formation of a tumour from a graft is impossible. Satisfactory evidence is still wanting of the existence in the serum of protected animals of substances directly harmful to the cancer cell.

Serious attention has been given to the additional alleged cancer cures which have been brought to our notice during the past year. Unfortunately it is impossible to assign a curative value to any of them. It is desirable, from a public point of view, to allude specifically to one alleged remedy for cancer which had been tested last year and has again been subjected to renewed tests. This alleged remedy—trypsin alone or in conjunction with amylopsin, or as pancreatic extract in which trypsin, as such, is absent—has received a quasi-scientific basis by the assertion that its employment had cured two mice inoculated with Jensen's carcinoma. When the assertion was made, its validity was carefully tested on mice with rapidly growing tumours. The large number of observations then made showed that the cures claimed were based on fallacies inseparable from so small a number of experiments. The re-investigation of this alleged remedy, with the modifications since suggested, has shown that it is incapable of curing mice of inoculated cancer or of influencing the progressive growth of tumours.

In the course of our investigations we have had to employ animals which have suffered from cancer, but have been freed from the disease by means other than spontaneous disappearance. The only means whereby we have been able to effect this object has been by the surgical removal of the tumours. This procedure has proved itself efficacious when properly carried out, both in animals in which transplanted tumours were growing and in animals spontaneously affected with the disease.

The scientific staff has received a valuable accession of strength in the person of Dr. Haaland, who has taken a foremost part in the development of experimental cancer research, and has thrown himself into the work of the Imperial Cancer Research Fund with praiseworthy energy.

REPORT OF J. D. BORTHWICK, CHIEF VETERINARY SURGEON OF THE CAPE OF GOOD HOPE, FOR THE YEAR 1906.

THE following is a full list of the Assistant Veterinary Officers serving on the Technical Staff at the end of the year:—

R. W. Dixon, M.R.C.V.S., East London; M. A. Hutchence, M.R.C.V.S., Kokstad; G. W. Freer, M.R.C.V.S., Uitenhage; J. Spreull, M.R.C.V.S., Somerset East; J. A. Robinson, M.R.C.V.S., Mossel Bay; A. Goodall, M.R.C.V.S., Worcester; C. Goundry, M.R.C.V.S., Cape Town; J. H. Lyons, M.R.C.V.S., Grahamstown; W. G. Pakeman, M.R.C.V.S., Molteno; S. Elley, M.R.C.V.S., Oudtshoorn; R. Paine, M.R.C.V.S., Elsenberg; P. X. Kearney, M.R.C.V.S., Umtata; W. Simson, M.R.C.V.S., Mafeking; W. Jowett, F.R.C.V.S., D.V.H., Cape Town. The last two arrived here October 23 and 30 respectively.

STAFF.

I regret exceedingly to have to record the loss of Veterinary Surgeon Neill, who died at Vryburg on December 24, from syncope; his loss was greatly felt by the farming community of Bechuanaland, where he had made himself very useful, and gained the confidence of the public.

Veterinary Surgeon Bowhill's engagement terminated on August 13 last, on which date he left the service of the Government.

STATUS OF VETERINARY STAFF.

The status of the Government Veterinary Surgeons is far from satisfactory, there being no scale of increase of salary laid down; consequently those who join the Service are in blind ignorance of their prospects, and their services may at any time be dispensed with.

Considering the largely increased capital invested in live-stock in this Colony, I consider the time has now arrived when the veterinary staff should be established on a firmer basis to give investors in stock greater security. I feel confident that large tracts of grazing at present unoccupied would be taken up and stocked if breeders were assured of competent veterinary advice and assistance.

To cope with the demand for the services of the veterinary surgeons, I would suggest that each veterinary surgeon be allotted a certain defined area, having employed under his direction several young laymen selected for their suitability for the work, who would be given a sufficient course of training to enable them to perform the large number of inoculations which are now done annually to arrest the spread of contagious and infectious diseases, and also to carry out treatment of minor ailments.

Farmers are yearly becoming more alive to the advantage of protective inoculation. This class of work, and also castration, both of live-stock and ostriches, take up a great deal of the veterinary surgeon's time, which could more profitably be devoted to the investigation of obscure diseases and their treatment. For example, Veterinary Surgeon Elley has during the year performed 450 castrations upon horses and donkeys alone, the satisfactory results attending upon which have led to a great demand for his services in that direction.

Castration was initiated to demonstrate to the farmers the different methods in practice, and not intended to become a general duty. To meet the necessary expense in some degree, I would recommend that a tariff of charges be made for such work, which the owners of stock would, I think, be willing to pay.

Statistics.

The Statistical Tables for 1906 are presented herewith, and should prove more interesting, as the totals for 1905 have been reproduced for comparison purposes.

It will be noted (see Annexure 1) that the total number of outbreaks reported during 1906 have increased by 411 over those reported in 1905, due chiefly to the large increase in the number of outbreaks of lungsickness with a corresponding heavy mortality among stock.

Besides lungsickness, which shows an increase of 368 outbreaks over that of the previous twelve months, the following diseases have increased in a minor degree, viz.: anthrax by 21, redwater 6, sponsziekte 55, and tuberculosis 10 outbreaks; while epizootic lymphangitis by 6, glanders 21, scabies 21, and swine fever 1, show decreases in the number of outbreaks reported by this department.

It will also be noted that although the number of outbreaks of anthrax reported have increased by nearly 50 per cent., the mortality among the affected herds shows a reduction of about 25 per cent.

Research.

The organised research work being conducted is that now being made by Veterinary Surgeon Spreull upon the disease "Lamziekte" amongst cattle; the experiments are being conducted at Koopmansfontein, in the Barkly West district, a farm credited with being most unhealthy for cattle in the way of "Lamziekte." The experiments, though promising, are not yet sufficiently advanced to admit of his reporting on the results obtained.

Veterinary Surgeon Elley has also been investigating disease amongst ostriches at Oudtshoorn, but as the farmers have not come forward as liberally with diseased birds as they were expected to do, the results have not been so fruitful as they might have been; however, Veterinary Surgeon Elley has been able to do some useful work in that direction, as will be seen from his report.

Lung Sickness.

This disease still carries off a large number of cattle yearly, but as an Amending Act has been passed compelling the destruction under partial compensation of all infected animals, it is hoped that when this Act is promulgated an advance will be made in the eradication of this disease. A very large number of inoculations have been made, more especially in the Transkeian Territories, where the disease is very prevalent. Regarding the chances of introducing the disease into a clean herd by means of inoculation, that is so remote, that it should not be allowed to stand in the way of preventive inoculation. On this question Veterinary Surgeon Kearney says: "I have not myself seen an instance in which the disease developed in a healthy herd as a result of inoculation, and I suppose I must have done over forty such clean herds."

And Veterinary Surgeon Dixon reports favourably on the prepared virus: "It is a pleasure to have to report favourably on the lungsickness virus that is being prepared at the Veterinary Laboratory, Grahamstown. I have inoculated a few thousand head of cattle with this virus, and the results have been most excellent. I have had very few bad swellings or gangrenous tails. Providing it is used within a month of its preparation, I find it is effectual, but I prefer, if possible, not to use it after fifteen days old."

Next year I trust to be able to submit a satisfactory report as to the progress made in the eradication of this disease.

Anthrax.

This disease still causes severe losses in Bechuanaland, Griqualand West, and in some of the Frontier districts, but fortunately, as the value of protective inoculation is being more appreciated and adopted, it is hoped to considerably reduce the number of deaths from this disease. On this subject Veterinary Surgeon Dixon states: "I still have good results by inoculating with the increased doses of Pasteur's vaccine, but I find it must be repeated regularly every year to be effectual. On one farm in the East London district, notoriously bad anthrax veld, just about twelve months after inoculation, three oxen contracted anthrax; immediately the whole herd was re-inoculated, and there were no more cases." By increased doses, Mr. Dixon means increased doses for heavy oxen and bulls, as against ordinary breeding cattle.

Veterinary Surgeon Kearney says: "Regarding the inoculation against anthrax, I put this in practice about a year ago on the station where, during the previous year, three or four deaths in cattle and one in a horse had occurred, and I am glad to say that the owner has not had one case since, and is about to re-inoculate. On one other farm where they lost six cattle and one horse last year, I have also recently inoculated, and I await with interest the result of the experiment, as the farm is, in my opinion, a highly infected one, and could only go on getting worse."

Redwater.

Protective Inoculation.—Veterinary Surgeon Dixon reports as follows:—"I have again, this winter and spring, had the opportunity of inoculating susceptible cattle, both colonial bred and imported, with immune blood as a preventive against redwater, and the results almost confirm my experience of last season. I found that great care has to be taken with imported stock in passing them through their inoculations.

"Colonial-bred cattle are very much less susceptible to redwater inoculation than imported. Blood that will only give slight reactions to colonial cattle will produce fatal attacks of the disease in imported cattle. In my last annual report I recommended the inoculation of imported cattle, using blood of a calf about 3 months old for first inoculation, and the blood of an older calf for the second.

"At the coast here, where redwater is very virulent, I find that even the blood of some calves 3 months old is too virulent for imported cattle, and I have since employed the blood of calves from about a month to six weeks old, and which have not been allowed to be exposed

to tick infection as far as is possible here. I have only inoculated a few imported cattle with this blood, but up to the present the results are more satisfactory. If the reactions from the first blood are only mild, then I repeat with blood from an older calf, but not sooner than sixty days after first. With valuable imported cattle it is better to keep them away from veld infection until at least three months after inoculation, as I have known cases where inoculated cattle, allowed to be exposed to veld infection five weeks afterwards, contract a fatal attack of redwater on the veld, it being supposed that they had ceased reacting to their blood inoculation."

Epizootic Lymphangitis.

As in the case of glanders, this disease is fast disappearing from the colony, which is very gratifying considering how widespread it was three years ago.

Veterinary Surgeon Goodall states:—"Epizootic lymphangitis has now practically disappeared; this I consider astonishing, when one bears in mind the great vitality of the organism, and the trouble it has caused in other parts of the world. There was every indication of the disease becoming a scourge in the Worcester district just after the war, but the outbreaks became gradually fewer in number, and this year I have only had one brought to my notice."

Stomach Staggers and Cirrhosis of the Liver.

Veterinary Surgeon Dixon reports:—"Stomach staggers and cirrhosis of the liver is the cause of great loss amongst horses all through my area (East London). Horse-breeding is practically impossible owing to this disease, as mares, after grazing two or more years on the sour veld, usually contract this affection and die. I have no doubt the cause is due to some plant or plants which are eaten, and which produce these actions slowly. The *Senecio latifolius*, a plant which has been experimentally proved to kill horses showing symptoms similar to those of stomach staggers, grows profusely all over my area. As regards treatment, I find, if taken early, much good can be done by medicinal treatment. I recommend first giving a purgative of calomel 2 dms., raw linseed oil 1½ pts., turpentine 2 ozs.; followed by 4 balls each containing 6 gs. of arsenic and 1 dm. of nux vomica, one ball to be given morning and evening."

Geel-Dikkop in Sheep.

An attempt was made to start further investigations regarding this disease, but unfortunately circumstances were not favourable.

Veterinary Surgeon Elley, however, reports upon that disease as follows:—"The past year has thrown discredit upon the old idea that when the veld is good dikkop does not appear. Throughout the Beaufort West district the veld has seldom been better than in the early months of 1906, and yet dikkop was very prevalent in January and February.

"Having been instructed by the Chief Veterinary Surgeon to wire immediately upon the disease appearing upon a farm suitably situated for experimental work being carried out, I did so on January 20, dikkop having made its appearance on Mr. de Jager's farm, Kuilspoort.

"Mr Robertson arrived on the 23rd.

"The first experiments were conducted with the idea of proving whether or not the disease was capable of being produced by inoculation. Twelve clean sheep were brought up from the Peninsula, where the disease has never been known to occur, in order that there should be no danger of the experimental animals possessing any hereditary or acquired immunity. Inoculations were made from the blood serum, and exudate taken from marked cases, but in no case did any rise of temperature or other febrile symptom appear. Large numbers of blood smears and sections were examined without any trace of a parasite being discovered.

"The next experiments were carried out in the hope of proving whether the disease is due to any bush or other substance picked up on the veld, the theory which has most favour amongst farmers. Seventy sheep were sent up from the Institute at Grahamstown, and whenever dikkop appeared in the vicinity the experimental sheep were despatched there. Forty were allowed to graze on the veld; the remaining thirty were securely muzzled whilst on the veld, being hand-fed and watered in improvised kraals. Although every effort was made to cause the experimental sheep to contract the disease, I regret that not one, either muzzled or unmuzzled, did so.

"I may point out that the erratic nature of geel-dikkop renders work of this sort very disappointing. A flock of one thousand sheep may have two or three hundred of its number affected in the course of a week, when it will suddenly cease, and possibly for a month there will not be another case.

"Thus the disease was very prevalent between February 5 and 9, on part of Kuilspoort veld, hired by Mr. Hugo. Kraals were made, forage, &c., sent out, and the experimental sheep arrived on the 11th, and remained until the 20th, on the exact veld upon which Mr. Hugo's sheep had been contracting the disease between the 5th and 9th. Next they were moved to a veld a few miles distant, where the disease had appeared amongst another flock. On March 4 I received word that about 300 sheep amongst two flocks on the farm Grootfontein had contracted the disease. The veld was about 20 miles distant. However, on the 6th idem my sheep arrived on that veld, remaining there until the 27th, yet not one contracted dikkop. When work of this nature is again undertaken, I would strongly advise that the experimenter be provided with a much larger number of sheep, even if they are only borrowed, compensation being paid for losses, as it would almost appear as if a small quantity does not contract the disease, even in proportion to its numbers, as readily as a large flock.

"As a result of the experiments, and from careful observations, I draw the following conclusions:—(1) That geel-dikkop is neither infectious nor contagious; (2) That it is not directly inoculable; (3) That the liver lesions are secondary, the primary lesions assuming more the nature of malignant œdema; (4) That its occurrence is influenced by local elevation, though not by general altitude."

Ostrich Diseases.

Veterinary Surgeon Elley was entrusted with the experiments upon ostriches conducted at Oudtshoorn. It is hoped, however, that the ostrich farmers will extend a more liberal co-operation to our officer,

without which very little practical work can be accomplished. Upon his experiments he reports as follows :—

"Probably the most important sickness amongst birds in the Oudtshoorn district is that known by the Dutch name of 'Vrot-maag.' I say most important, although it is probable that liver-sickness carries off as great a number of birds, but in the case of the former trouble the owner has had the expense and worry of bringing up his birds until they are seven, eight, or nine months, or perhaps older, when they will commence to die off.

"I believe this disease to be due to the presence of great numbers of minute hair-like worms, not in the stomach cavity alone, but occupying the lumens of the gastric glands. When the glands become invaded by these parasites, their action is very considerably modified or actually destroyed; the constant irritation leads to inflammation and pus formation, and in the place of the normal gastric juice, a mixture of gastric juice and pus, the latter steadily increasing as the former diminishes, is discharged into the stomach cavity.

"As the parasites increase digestion becomes more and more impaired, and muscular contraction of the stomach walls becomes lessened, and the bird, although provided with abundant food, literally dies from starvation, or from the assimilation of toxins produced in the diseased stomach. The other abnormalities to be found upon *post-mortem* examination are occasionally inflammation of the small bowel, and rarer, a clear exudate thrown out in the mucous membrane of this part of the intestine; either or both of these conditions, which no doubt accelerate death in some cases, may reasonably be put down as a sequence to the state of the proventriculus or stomach. The stomach frequently contains an enormous mass of decomposing food, in no way crushed or prepared for digestion.

"If treatment is to be adopted, it is quite evident that it must be in the early stages, and it must be systematically carried out. If the trouble is in any way far advanced, it is folly to suppose that one or two doses of any medicine whatsoever will procure a cure. The life history of the parasite is unknown. It is probable that the eggs or embryos pass out with the fæces, undergo certain changes in damp situations, and are then taken back with food or water in a fit state to complete the life cycle. After the embryos are swallowed it appears to me they find their way direct to the gastric glands, where pairing probably takes place. In a number of *post-mortem* examinations upon chicks, from two weeks to two months old, I have found small quantities of the parasites, from one up to eight, in the gastric glands, when none could be found adhering to the mucous membrane of the stomach. The youngest bird which I have seen affected was twelve days old. It is quite evident, then, that birds become infected at a very early age, and if those farmers upon whose ground the trouble is rife wish to combat it, they must likewise begin to dose their birds at an early age, and they must recognise the fact that it is very little use to dose birds and immediately put them back into camps where diseased birds have for years been running.

"This is one of the greatest difficulties to be contended with in my area. The entire farms are divided into lucerne camps, all of which are occupied by birds; hence it is probable that the whole farm becomes more or less infected; moreover, the regular irrigation must

render the farms particularly suitable for that phase of the life history of the parasite spent in the open. Regarding drugs, probably the most efficacious are thymol, picrate of potash, and carbolic acid; but it must be remembered that early and regular dosing is of more importance than the actual drug. I regret that more dosing, solely for experimental purposes, has not been carried out. The high value of local birds has no doubt made farmers indisposed to provide birds for the purpose, and owing to lack of funds I was unable to obtain authority to purchase any; and it must be borne in mind that a considerable number of birds are required for this work, as each bird should be killed for examination after receiving a dose of a known quantity and strength of the drug to be tried; for I do not consider it of any practical value to place portions of an affected stomach in certain solutions, as it cannot be supposed that in the recent state any inanimate matter enters the gastric glands otherwise than by the blood stream.

"I consider, if energetic steps were taken, a great deal might be done to modify the enormous losses occasioned annually by this disease.

"*Liver-sickness.*—This disease is, I compute, responsible for about 85 per cent. of the deaths of birds under 2 months old in this district. Birds from a few days to 6 weeks or 2 months are alone susceptible, the majority succumbing at about 3 weeks. The fact that the symptoms appear so soon after the chick leaves the egg, that after six weeks they are usually safe, and that there is no alteration in food or general management at this time, all tend to point to some congenital debility which either overcomes the chick, or is itself overcome during the first month or six weeks outside the egg.

"Of the many theories suggested as the cause of this disease I am afraid none are tenable. Artificial incubation was a favourite one, yet I am informed that yellow liver was never more prevalent in the Oudtshoorn district than this season, and, so far as I am aware, there is not an artificial incubator working within my area.

"Scarce or irregular feeding of the parent bird is also stated to be a probable cause, whereas during the last two years food has been abundant. Housing, or the absence of it, for the chicks, so far as my experience goes, makes no difference, and I have seen them die off as readily when left with the parent as when removed.

"Blood smears and sections forwarded to Mr. Robertson, Director of the Veterinary Laboratory, Grahamstown, have revealed no parasites, and cultures which we have attempted to take from the livers of diseased birds remained sterile. Moreover, although endemic, it would scarcely appear infectious.

"As stated above, everything would appear to point to some congenital debility. Is it not possible that the extremely artificial life to which breeding birds are submitted has something to do with it? When one remembers the natural life of an ostrich, and then compares it with the life of the average pair of breeding birds, confined year after year upon a third or a quarter of a morgen of ground, fed entirely on lucerne, with insufficient grit, one would wonder rather at the absence of disease than at its presence. Whether or not this is the direct cause, I am convinced it is a predisposing one.

"An incident recently brought to my notice has strengthened me

in this belief. The owner of one of the best farms in this district gave up attempting to raise chicks three years ago, as for several years previously all his chicks had succumbed. His breeding birds were turned out into the larger camp, and on to the veld. This season the attempt was made again, and in June four pairs of birds were camped off, the majority of these being his old breeding birds. He has now forty-three fine healthy young birds, varying from 1 to 4 months old, out of fifty chicks hatched. I have observed that yellow liver is more prevalent amongst the chicks of old breeding birds than amongst those of young ones, that it is more frequent on the farms of those who for years have held rigidly to their own stock, than on the farms of those who regularly bring in fresh birds. Moreover, I have never seen it amongst the hundreds of chicks which I have seen taken out of the nests of the Karoo veld, housed at nights under perhaps not too hygienic conditions, and fed entirely on lucerne for the first month or six weeks. And I may here mention that veld birds from which the chicks are taken as soon as hatched, which is the practice in the Beaufort district, will lay a considerably greater number of eggs in the twelve months than any camped breeding birds, so that the egg-forcing theory will not hold good. Medicinal treatment appears of little avail. Calomel, quinine, ammonia, and salol have alike been tried, and, so far as our knowledge goes at present, I consider it is the management of the parent bird which must be looked to rather than treatment of the chicks.

"STATISTICAL TABLES.

"Annexure (1).—General Summary showing numbers of Outbreaks of Animal Diseases scheduled under Act No. 27 of 1893 during 1906, with comparative totals for 1905.

Month	Anthrax	Epizootic Lymphangitis	Glanders	Lung-sickness	Redwater	Scabies (equine)	Sponsziekte	Swine Fever	Tuberculosis	Total
January ...	8	1	12	31	16	...	3	...	1	72
February ...	5	2	6	26	48	1	18	...	3	109
March ...	9	...	8	24	29	...	23	1	1	95
April	5	...	7	31	11	...	9	...	2	65
May	5	...	5	47	21	2	12	...	1	93
June	5	2	6	58	4	4	12	...	3	94
July	2	...	9	64	4	...	7	...	...	86
August ...	3	...	9	61	3	1	5	...	...	82
September ...	2	2	5	46	...	...	6	...	1	62
October ...	5	...	7	63	3	1	9	...	...	88
November ...	14	...	4	55	8	6	17	...	...	104
December ...	3	2	10	49	8	...	12	...	1	85
1906 ...	66	9	88	555	155	15	133	1	13	1,035
1905 ...	45	15	109	187	149	36	78	2	3	624

"*Everted Cloacæ.*—During the winter months quite a large number of chicks succumb to this troublesome complaint, which I believe to be due to an excess of phosphatic salts in the urine, probably aggravated by a chill on the highly developed kidneys of the young birds.

The salts become deposited on the lining of the cloaca at the termination of the ureters. The irritation so produced leads to straining and eversion of the cloaca, expulsion of fæces and urine is interfered with, inflammation and gangrene follow, and death is the usual termination.

"The condition appears amenable to treatment, and a few doses of nitric acid, with a change of food where possible, a lubricant to the affected parts, and the housing of the chicks at night and until the dew is off the lucerne in the morning, generally has satisfactory results, whereas, if not so treated, few recover."

Reviews.

HORSE-BREEDING TO COLOUR. By Sir Walter Gilbey, Bart. Published by Messrs. Vinton and Co., London. Pp. vi. × 45. Price, 2s.; post free, 2s. 3d.

Under the above title the author has produced a very interesting little book dealing chiefly with the frequency of the occurrence of the various colours in horses, taking in turn the thoroughbred, the hackney, and the shire. In dealing with each breed, we are first given a brief sketch of the origin, and then special reference is made to the colours. The author says that the variety of colour exhibited by our race-horses would seem to be less in our own day than it was a century or more ago. For example, greys at that time were amongst the most successful horses on the Turf, while now they are comparatively rarely met with. The Derby has been won only once by a grey horse, namely, Gustavus. The other colours are treated in the same style, with a very interesting history of the prepotency of certain sires, such as Eclipse, &c. The Derby has been won by a chestnut thirty-three times, by a brown twenty-four times, by a bay sixty-five times, by a "bay or brown" once, and by a black once. Hackneys and shires are similarly treated, but although the book is full of interesting information we are afraid we fail to gather much to assist us as to how horses may be bred to colour.

We certainly recommend the purchase of this little work by all interested in the horse-breeding industry. The type is good, and the six full-page illustrations reflect great credit on the publishers.

SURGICAL PATHOLOGY OF THE JOINTS OF THE DOMESTIC ANIMALS. By C. Cadéac, Professor, Lyons Veterinary School. Volume I., 468 pages, 148 illustrations. Price 5 francs. Published by Messrs. J. B. Baillière and Sons, 19, Rue Hautefeuille, Paris.

This publication is the twenty-eighth volume of M. Cadéac's "Encyclopédie Vétérinaire," and is the continuation of the series on the surgical pathology of the domestic animals that he is now bringing out. The former volumes of this section of the Encyclopædia are: General Surgical Pathology, Surgery of the Foot, Surgical Pathology of the Skin, Blood Vessels, and Lymphatics, Surgical Pathology of the

Tendons, Muscles, and Nerves, and Special Surgical Diseases of the Tendons.

The present volume deals with the following matters: Diseases of the Bursæ: Injuries, Simple and Contused Wounds and Hygromas; Diseases of the Sheaths of the Tendon: Injuries, Synovitis, Wind-galls; Diseases of the Articulation: Strains, Luxation, Dislocation, Contusions.

The series on the Surgical Pathology of the Domestic Animals has filled a long-felt want, and with this volume, which it has taken M. Cadéac ten years to collect sufficient material for, the gap is filled up.

M. Cadéac has arranged the book in accordance with the anatomical relationship of the different regions, each organ having a separate chapter devoted to it, and the whole being collected into a series of articles dealing with the different alterations and lesions they are subject to.

The author recognises the fact that as the domestic animals differ in their anatomical structure, so does the pathology of their organs, and that each different species has different diseases; it is therefore necessary to treat the pathological changes of each separately. This plan has been adopted by M. Cadéac, and it lends itself to a natural classification, and aims at being able to distinguish each pathological change without interrupting the thread of continuity between the different morbid processes. Each animal is separately treated upon where necessary, and this plan is observed throughout.

The book is well illustrated, the drawings being taken from nature, and show the points they are intended to bring into prominence in a most striking manner. We consider this is one of the most useful volumes for the busy practitioner that has yet appeared of the "Encyclopédie Vétérinaire," and should be in the hands of everyone who can read French. Even those who cannot will find that the illustrations alone are worth the cost of the book.

THE PIG IN HEALTH, AND HOW TO AVOID SWINE FEVER. By Sir Walter Gilbey, Bart. Published by Messrs. Vinton and Co., London. Pp. 46. Price 2s.; post free, 2s. 3d.

This is a very interesting little book, giving, as it does, the history of the pig and its evolution from the wild to the domestic type. The book is in no way technical, and when one begins to read it one is disinclined to put it down until the end is reached. The first four chapters deal with the history of the wild swine in England; old authors' accounts of pig keeping, the various breeds of swine, and the diseases of swine in the olden times, the chief of which would appear to have been "measles." The fifth chapter gives an account of the losses sustained as the result of swine fever, calculated from the returns of the Board of Agriculture. The remaining three chapters deal with modern swine keeping, the housing of swine and selection and feeding. It is by special attention to the housing that the author would avoid swine fever, the disease, in his opinion, being largely one of domestication. There are eight excellent illustrations, three of which are very good plans for styes for store pigs, individual pigs, and for a sow and litter. The book should be in the hands of all pig breeders. The printing and binding are good.

THE BACTERIOLOGICAL EXAMINATION OF DISINFECTANTS. By William Partridge, F.I.C. Published by the Sanitary Publishing Company, Ltd., London. Pp. 66 and 24. Price 2s. 6d. net.

This book deals with the various methods at the disposal of the analyst and bacteriologist in ascertaining the relative values of disinfectants. Mr. Partridge, in common with many other disinfectant experts, favours the employment of the Rideal-Walker process, and a considerable amount of the book is devoted to this method. Incidentally the author points out some of the causes of discrepancies in results obtained by different workers with this test, and a very full and detailed description of the technique is given, so that the book should do much to remove the apparent difficulty of the method.

Chapters dealing with the influence of organic matter on disinfectants, on their properties and selection, are given, so that the book will not only supply the needs of the laboratory worker, but also be of service to the medical officer of health, the veterinary inspector, and the sanitary inspector, in showing them how to compare and choose disinfectants, so that their authorities may be supplied with the best all-round disinfectants at the lowest price consistent with efficiency.

A brief preface by Major Fowler, R.A.M.C., is added, which shows the present position of the standardisation of disinfectants.

We have no hesitation in recommending this little handbook to all concerned with disinfection, students and practitioners alike, as it is just full of valuable information. The publishers are also to be congratulated on the style and production of the little volume.

Personal.

PROFESSOR THOMASSEN, of the Utrecht Veterinary School, died on December 21, 1906, at the age of 51. His writings were well known, and we trust in an approaching number to give a review of his life and work.

WE regret to have to report the death of Herr Peter Adam, Director of the Landshüt Stud, on November 8, 1906. He was born at Augsburg on September 13, 1849, and was the son of Théodor Adam, founder of the *Wochenschrift für Tierheilkunde*. He graduated at Munich in 1871, and in 1872 succeeded his father as State Veterinary Surgeon at Augsburg. In 1877 and 1879 he visited the studs in Austria, Germany, and France. In 1881 he was appointed Veterinary Surgeon of the Munich Stud. In 1881 Director in the Zweirbrucken Stud, and in 1887 Landstallmeister of Landshüt. He considerably advanced the horse-breeding industry in Lower Bavaria, and wrote numerous papers on horse breeding and horse mastership, also a series of pamphlets ("Vorträge uber Pferdekunde"), and a small book on stable management ("Die Lehre der Beurteilung des Pferdes.")

M. VACLEV KOTLAR, veterinary surgeon, has been elected deputy to the Reischsrath for the constituency of Melnik, Jungbunylaw, by a majority of 2,000 votes. This is the first time that a practising veterinary surgeon has been sent to the Chamber of Deputies at Vienna. The Chamber of Deputies at Vienna is, of course, the Austrian House of Commons, and the Austrian veterinary surgeons appear to be aware of the necessity of direct representation. If the Annual Registration scheme is adopted there will probably be a certain amount set aside to attain the same end in our British House of Commons.

THE post of Principal of the Punjab Veterinary College, Lahore, becomes vacant by the selection of Major Pease to be Inspector-General of the Civil Veterinary Department. The College, under its two last Principals, Colonel Nunn and Major Pease, has become the foremost institution of its kind in India, and its usefulness and importance are still expanding steadily. The selection of the new Principal will doubtless be postponed until Sir Denzil Ibbetson's return next week.

DIVISIONAL ORDERS, 3RD (LAHORE) DIVISION, JUNE 14, 1907.—The following appointments and transfers of officers of the Army Veterinary Corps have been ordered by the Quartermaster-General in India: Major M. D. Smith from the 6th (Poona) Division to Lahore Cantonment as Senior Veterinary Officer 3rd (Lahore) Division and Frontier Brigades; Lieutenant J. M. Verney from Lahore Cantonment to Jullunder. All other veterinary officers in the Division stand fast.

All correspondence on veterinary matter should be addressed to the Senior Veterinary Officer, 3rd (Lahore) Division, Lahore Cantonment.

Translations and Extracts.

DOG AND CAT EXPERT.

ROYAL COLLEGE PROSECUTION.

AT the Feltham Petty Sessions, on Monday, the 30th ult., William J. Wilson, of Warwick House, Ashford, Middlesex, was summoned, at the instance of the Royal College of Veterinary Surgeons, for that he, not being on the register of veterinary surgeons, and not holding at the time of the passing of the Veterinary Surgeons Act, 1881, the Veterinary certificate of the Highland and Agricultural Society of Scotland, did take and use an addition and description, to wit, "canine and feline medical expert," stating that he was specially qualified to practise a branch of veterinary surgery.

Mr. Moreton Smith (Recorder of Rochester) appeared to prosecute on behalf of the Royal College of Veterinary Surgeons, and Mr. H. G. Rooth defended.

In opening the case, Mr. Smith said the proceedings were taken under the 16th and 17th Sections of the Veterinary Surgeons Act,

1881, under which a person improperly representing himself to be a veterinary surgeon rendered himself liable to a penaly of £20. In this case the defendant carried on a business at Ashford, in Middlesex, in which he described himself as being a "canine and feline medical expert," specially skilled in the diseases of dogs and cats, and as being able to apply the most scientific means in the treatment of their ailments, and to effect a speedy cure. He advertised this considerably, and also stated that he was the "canine and medical expert," by appointment, to the Southern Counties Cat Club, the Canine Society of Middlesex, the Cat Club, &c.

At Ashford he kept a sanatorium for sick dogs and cats, besides having kennels there for healthy ones. The attention of the Royal Society having been called to the defendant's business and representations, inquiries were made, as a result of which the defendant wrote a letter to the Royal College, enclosing a printed extract from a trade journal, in which he disclaimed all right to use the letters M.R.C.V.S. after his name, as had been done in one of the periodicals. On April 15 this year a dog was taken to the defendant for treatment. Having examined it, he gave a certificate that it was suffering from kidney trouble, and intimated that his charge for treating it would be 12s. 6d. per week. The dog was left with him for treatment, but subsequently he informed the owner, first that the animal was suffering from rickets, and afterwards from worms. The question for the Bench was whether, in using the description "canine and feline medical expert," the defendant was specially qualified to practise the cure of dogs and cats within the meaning of the Act.

William Knight, a clerk, residing at Roseford Gardens, Shepherd's Bush, deposed that on April 15 he accompanied Mr. Adolphus Loue, the owner of a St. Bernard puppy, to the defendant's place at Ashford. On seeing the dog the defendant said something about the puppy being in a bad way; then he felt it all over as it lay on the floor, and, producing a stethoscope, he examined it, said it was suffering from kidney trouble, and that he would start treating it by giving it a pill at once. They agreed to leave the dog, paid £1, and received a receipt in an envelope, on which was printed "Messrs. William J. Wilson and Company, Canine and Feline Medical Experts, and Veterinary Medicine Manufacturers, Ashford, Middlesex," and a certificate stating that the animal was suffering from kidney trouble. Subsequently the defendant wrote to say the dog was suffering from rickets. On April 26 he wrote to say it was slightly better, and on April 29 he again wrote to say it was suffering from worms. The dog was taken away on June 13.

Mr. Rooth: Has the defendant ever suggested to you that he was a veterinary surgeon?—No.

Or that he belonged to the Royal College?—No.

Adolphus Loue corroborated, and added that the dog was with the defendant for about two months, and that he paid him 12s. 6d. a week for its treatment during that time.

Mr. Rooth: Why is it that you did not take this dog to the Veterinary College?

Witness: If you will let me explain in my own way ——

Mr. Rooth: Well, you need not. I know what the answer would be. It was a trick to catch the defendant.—I don't admit that.

Mr. Rooth: Did you know the defendant had no veterinary diploma?—I knew that.

Do you know the particular meaning of the word "expert"?—Personally, I am suspicious of all experts. He is a person to be avoided.

Mr. Smith: If a person describes himself as a "medical" expert, you would expect him to have some knowledge of medicine?—Well, I should say such a person was a quack, relying on my knowledge of the world.

And what do you mean by a quack? A man who has knowledge, or pretends he has knowledge?—A man who has both, but who pretends in a greater degree.

Mr. Rooth urged that the summons should be dismissed, stating that there was nothing in the evidence to show that the defendant represented that he was specially qualified to practice a branch of veterinary surgery. He was as much entitled to do what he did as an apothecary to sell drugs, administer them, and charge a fee for so doing, and he quoted a case in support of this contention.

Defendant was called, and said he had been in business at Ashford as a canine and feline expert and manufacturer of veterinary medicines for seven years, and had never represented that he belonged to the Royal College of Veterinary Surgeons.

Mr. Smith: Then what do you mean by "canine and feline medical expert"?

Defendant: That I treat dogs and cats medicinally. If I omitted the word "medical," I should have no end of dogs and cats brought to me for my opinion as to their value only.

In answer to further questions, witness added that he was once described as M.R.C.V.S. in the catalogue of the Southern Counties Cat Show, but he wrote in several publications denying that he belonged to the Royal Society.

Edward Brooker, of Flint House, Ashford, Hon. Secretary of the Thameside Kennel Association, said he had known the defendant for some considerable time, and he had never represented to him that he was a M.R.C.V.S.

The Bench convicted, and imposed a fine of 20s., including costs.

(*Daily Telegraph.*)

THE APPLICATION OF THE RÖNTGEN RAYS FOR THE DETECTION OF TUBERCULOSIS IN MEAT INSPECTION.*

BY M. MARTEL.

As far as I am aware the Röntgen rays have never been used for the purpose of meat inspection.† It is, however, only necessary to think how frequently tubercular lesions in the ox and pig become infiltrated with lime salts, to realise how useful they would be in detecting certain

* Paper read before the Paris Veterinary Medical Society on June 6, 1907.

† Porcher (*Recueil d'Alfort*, 1897, p. 574) remarks on the possibility of studying bony lesions, tubercle and other diseases by means of the radiograph. Hoffmann (*Berlin. Tierartzl. Wochenschr.*, 1901, p. 561) made some studies at Munich regarding bony lesions of the limbs in connection with lameness.

ill-defined lesions in the tissues, more particularly in both the superficial and deep-seated glands.

By the courtesy and assistance of Messrs. Radiguet and Massiot I have been enabled to make a number of radiographs, which I produce for the inspection of the members of the Society.

The first radiograph (fig. 1) is a series of lymphatic glands from the pig, some of which are affected with tuberculosis in varying degrees,

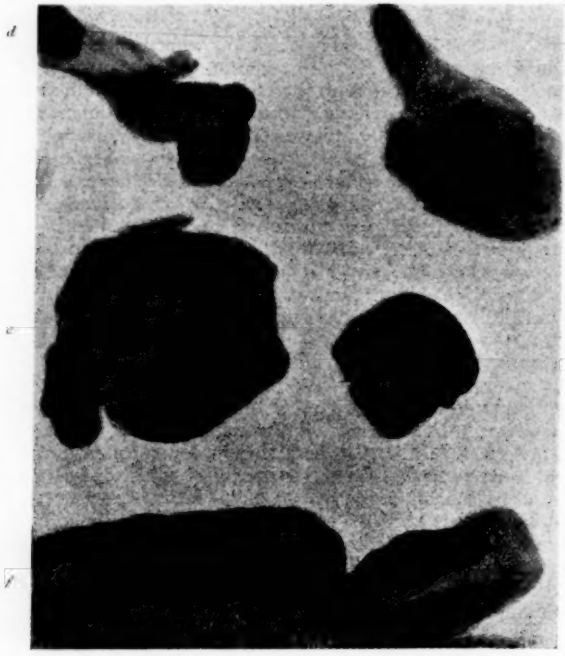

FIG. 1.—MESENTERIC GLANDS OF A PIG.

a and *b* are badly diseased, *c* slightly so, and *d* and *f* are healthy. The dark shaded portions in the healthy glands are easily distinguishable from the granular patches, which correspond with the diseased parts.

others are healthy; amongst the diseased are some in which the lesions are obscure and hidden by the layer of fat round the gland. The glands which are shown in the radiograph as being healthy proved to be so when examined. You may notice that certain details of structure are shown, and that the layer of fat, if of a slight thickness, is shown as a dark layer, and the gland tissue slightly lighter. The dark shaded portions correspond with the slightly thickened parts, but the masses of fat, which are also dark, should not be confused with the granular ones that represent the tubercles.

The next radiograph is one from a pig, the specimen being the intestines and lymphatics with a large amount of fat. It shows a

number of the glands invaded with tubercle, and others that are healthy.

Specimens from the ox are not less satisfactory, the one I show you (fig. 2) is a portion of the anterior lobe of the lung of an ox, aged 3, and in it the lesions are very distinct. The tubercles are clustered round the bronchi like masses of grapes, and a diseased bronchial gland is also well shown. With the radioscope the lesions are equally well shown.

FIG. 2.—ANTERIOR LOBE OF LUNG OF A TUBERCULAR OX.

Showing numerous tubercles in the pulmonary tissue. *g*, a portion of a diseased bronchial gland.

The success of this method depends on the skill of the operator, as the manipulation of the Röntgen rays requires a certain technical skill that is only acquired with practice. The time that the exposure is made for is also important, as it varies with the thickness of the specimen the rays have to penetrate through, and, unfortunately, as the matter is only in an experimental stage, it is impossible to give any definite rules on the subject.

With the results I have obtained it opens the question as to how far it is practicable to utilise the Röntgen rays in the inspection of meat, and it appears to be so if it is only a moderate quantity, and no doubt it is more accurate and precise than the ordinary naked-eye method.

It will disclose lesions that, in the absence of the tuberculin test, would never have been suspected, and even in the case of reactors lesions might be discovered that otherwise would escape notice. It seems to me that it would be applicable to towns of moderate size, and especially so in the case of carcases of pigs.

(*Recueil de Médecine Vétérinaire.*)

[Experiments both with the radioscope and radiograph have been made in connection with different diseases in animals. As a rule acute diseases give either negative or unsatisfactory results in abscess or necrosis of the liver in the ox, or purulent infection in the horse. Melanotic infection of the lung in a calf gave no results at all. Chronic lesions, characterised by fibrous induration, only gave traces, but these observations are very incomplete, and the new method seems worthy of application to other diseases, such as glanders, &c. In distinguishing between the different species of animals that provide meat by means of the structure of the bones, the radioscope gives excellent results.—Ed., *V.J.*]

FRACTURE OF THE THIRD PHALANX, CAUSED BY OSTEITIS.

BY JOLY AND VIVIEN (SAUMUR).

The patient, a mare, aged 4, was found to be lame from a corn in the near fore foot. Both fore shoes were removed, and the corn pared out and dressed. The near fore shoe was tacked on without any difficulty, but when the off fore foot was lifted up, the mare was found to be quite unable to put any weight on the other one. The near fore was carefully examined, and was found to be hot from the hoof to the knee, and very painful, particularly when the foot was twisted; there was no deformity or crepitation, but the foot was hotter than the other, and the coronet was swollen.

A fracture of the second or third phalanx was diagnosed, and the limb put up in a plaster bandage and splints. The mare, six months afterwards, was able to do some work, although she was still slightly lame. She was then attacked with pleuro-pericarditis, and died, when a *post-mortem* was obtained.

Near fore.—All three phalanges showed traces of osteitis, increasing in degree from the first to the third. Looked at from the plantar surface, the pedal was much smaller on the outer than the inner side. It also showed signs of intense rarefying osteitis, particularly round the insertions of the tendons and ligaments. The walls of the bone showed similiar lesions of both rarefying and proliferant, osteitis and numerous osteophytes. The pyramidal process was much deformed by a coating of newly-formed bone tissue over its surface, and the edges of the plantar surface round the leaders were absorbed, so that the bone did not stand level.

There was a partly united fracture extending through the articular surface down to the plantar through the pyramidal process, almost dividing the bone in two. Both the pastern and fetlock bones were affected, the former more so than the latter.

Off fore.—The pedal bone showed much the same appearances as the near one. The pastern bone had them, but not so well marked; the fetlock, to all appearances, was healthy.

The differences in weight of the bones of the right foot over the left were: first phalanx, 15 grammes; second, 5 grammes; and third, 5 grammes less than the opposite side. The sesamoid bones were equally affected on both limbs, and, with the exception of the above-mentioned fracture, the articulations were healthy.

The case appears to be interesting from the fracture having arisen without any apparent cause.

(*Recueil d'hygiene et de Médecine Vétérinaires Militaires.*)

ATROPHY OF THE PEDAL BONE, WITH SARCOMA FORMATION.

BY FRANZ BECKER.

THE animal had been purchased in June, 1905, and a few days after changing hands he was found one morning in his stable, very lame on the near hind. The cause of the lameness was obscure, but the foot being very hot and painful, it was attributed to a fracture of the third phalanx. The animal was rested and treated, and in October he went back to his work, which he performed fairly well, when he again suddenly fell lame. The lameness this time was much worse than before, and gradually increased, so that by the end of December the patient was not able to put his foot to the ground. The muscle of the quarter wasted away, and a hard, hot swelling appeared over the fetlock joint.

A radiograph was obtained, and the third phalanx appeared to be simply a black irregular mass pushed up behind under the second one. The other structures were clearly shown. The animal was destroyed, and it was found that the hoof was filled up with a growth that on examination proved to be a round-celled sarcoma.

The author thinks that the growth took place subsequent to the first fracture.

(*Zeitschrift für Veterinarkünde.*)

SUBCUTANEOUS CAVERNOUS LYMPHANGIOMA IN A HORSE.

BY DR. D. BERNARDINI.

TUMOURS of this nature appear to be exceedingly rare in animals, and the author first gives a brief summary of them in man. The case which he describes occurred in a heavy cart horse, aged 7, that was brought to the Milan Veterinary School on June 14th, 1904. According to the owner the animal had for the last two years a tumour the size of an orange over the hip joint, which had gradually increased without causing any inconvenience or giving rise to any pain. It, however, was a great eyesore, and the animal was sent to the school for operation.

On entry there was found to be an enormous tumour implicating the whole of the right thigh, especially on the front and outside. The skin was adherent but normal, but it was difficult to distinguish the limits of the growth, which to the hand gave the feeling of the part being œdematous. When walked and trotted there was slight lameness.

An exploratory puncture in the lowest part was made on June 17, that gave exit to a clear yellow-coloured fluid; the tumour itself seemed filled up with a pale pink substance like sponge. Drainage tubes were inserted into the most dependent parts to draw off the fluid, but there was no diminution in the amount, which increased after the tube had been removed. The growth then began to suppurate, and antiseptic irrigation was used, but as it had no effect the growth was dissected out. The results were disastrous, as necrosis set in and the animal died the fifteenth day after. On *post-mortem* examination it was found that the cause of death was lobar pneumonia with numerous inelastic patches of necrosis.

(*La Clinica Veterinaria.*)

PYRO-PUNCTURE.

BY LEWIN.

THE author prefers Déchery's thermo-cautery, with a dressing of tincture of iodine afterwards. He gives the following statistics of his experience with this instrument.

Affection.	Operations.	Cures.
Splints and Exostoses	6 ...	6
Ringbone	5 ...	5
External Spavin (Jardes)... ...	2 ...	2
Spavin	2 ...	2
Chronic Arthritis	2 ...	2
Navicular	1 ...	1
Lumbar Myositis	1 ...	1
Tenositis and Synovitis	9 ...	8
Hydrarthrosis	5 ...	5

(*Zeitschrift für Veterinarkünde.*)

NEEDLES AND PINS SWALLOWED BY DOGS AND CATS.

As soon as possible small pills of tow or cotton wool soaked in milk or jam should be given, and half an hour later an oleaginous purgative. A thick gruel of scraped potatoes is also useful, or anything that will make the fæces semi solid and envelop the pin, but the immediate administration of purgatives which will increase peristalsis is condemned. The foreign body is frequently found in the fæces enveloped in the cotton wool.

(*La Presse Vétérinaire.*)

CASE OF EPILEPSY FROM DEFORMITY OF THE SKULL.

BY M. F. MOUNET.

ALTHOUGH a number of cases of epilepsy from injuries are common in the dog, there are but few records of the actual cause. A description is given by Siedamgrotzky (*Sachs Jahresber.*, 1872) of the condition of the skull in an epileptic dog. Bassi (*Société Centrale de Médecine Vétérinaire*, February 17, 1896) has also published an article on the same subject. The author gives the following experience, which supports Bassi's theory :—

On September 20, 1906, a puppy was bitten in the head by another dog and became insensible, but with appropriate treatment recovered. Just behind the left ear there were three small wounds, and an extensive bruise over the left parietal region. The next day the patient seemed to be perfectly well, but on September 22 he had an epileptic fit, and during the course of the week three slighter ones, after which he seemed to revive and do well, till December 4, when he had another attack. Knowing the dog's history, the author examined the skull carefully, but could not find any injury. In spite of all efforts he got worse and worse, and was destroyed on February 18, 1907.

A *post-mortem* examination was made about an hour after death. The different organs of the body were healthy, and there was no injury to the skin over the left parietal region. The brain was slightly œdematous, and sections were slightly wetter than normal; the ventricles were dilated, and filled with a large quantity of turbid serum. A transverse section of the cranium showed that the bones on each side were not symmetrical, the left parietal bone being flat and pressing on the brain : this became more apparent when the skull was boiled, the bone being distorted in a direction from before backwards, and from without inwards. The inner face of the left parietal bone was flattened, thin, and covered with rough prominences, and in the lower part of the cranium, just above the occipital foramina, there was a sharp, irregular, prominent ridge. The occipital foramen was deviated to the right.

The case, the author thinks, is interesting, as it illustrates the evolution of symptomatic epilepsy from the primary injury up to the period described by Nocard as that of "Tertiary symptoms and cerebral disturbance," which came on fifteen months after.

All authors have recognised hydrocephalus in cases of epileptic fits due to either deformity of the skull or tumours, and it would be interesting to study the exact part that chronic hydrocephalus plays in the etiology of epilepsy.

(*Revue Générale de Médecine Vétérinaire.*)

A NEW HÆMOSTATIC BANDAGE.

BY MAIOCCO.

THE apparatus consists of an indiarubber tube 50 centimetres long and 20 centimetres in circumference, closed at one end and prolonged at the other by a small tube, 5 to 6 centimetres in circumference, which is furnished with a bellows blower. The large tube is covered with

strong linen or canvas, and has a tape about 2 to 5 centimetres wide at its closed end. The large tube is passed round the limb to be operated upon and fastened with the tape and blown up with the bellows, compressing the limb. The apparatus is highly spoken of by Italian surgeons.

(*Il Moderno Zoocatro.*)

TREATMENT OF NAVICULAR DISEASE BY LIGATURING ONE OF THE DIGITAL ARTERIES.

BY M. GEORGES DUMAS.

M. Joly published a most interesting article in the *Revue Générale de Médecine Vétérinaire* of July 1, 1905, on the Treatment of Diseases of the Horse's Foot by Ligaturing One of the Digital Arteries.

The subject of this note was about 12 years of age, and had been lame for several months with navicular disease in both fore feet. The owner, after treating the animal without success, came to consult the author. The symptoms were so clear that there could be but little doubt as to the cause of lameness, but an injection of cocaine over the plantar nerve confirmed the diagnosis.

The horse was practically useless, and the author was given a free hand. He resolved to perform M. Joly's operation of ligaturing one of the digital arteries, as he doubted the success of neurotomy.

The operation was performed on October 29, 1906, the internal digital artery on the near fore being ligatured at the pastern. Only one limb was operated on, as the author intended to do the other on a future occasion if the first was a success.

When the horse was let up the lameness was worse; indeed, it was so bad that the horse could hardly put his foot to the ground. This, however, did not give rise to much alarm, as it was recognised to be due to pressure on the plantar nerves by the side line. The foot was much better than the opposite one. The next morning the animal was better, but he was still lamer than before the operation.

He was kept in the stable till the operation wound healed, "about ten days," and then turned out to grass. After about a fortnight there was a great improvement, but the animal was still too lame to work. He improved daily, and after three and a half months he was going sound on the near fore. Since then he has done his usual work, which is severe, on the pavement. The author wished to operate on the off fore leg as well, but as the horse was only "short" on it, not really lame, the owner would not consent.

M. Dumas is of opinion that ligature of the digital artery is an operation that is admirable when neurotomy is not; and that although the lameness is increased for a short time, it need cause no alarm, as it soon disappears.

(*Revue Générale de Médecine Vétérinaire.*)

NOTE ON THE "BALÉRI" DISEASE OF THE FRENCH SOUDAN.

BY M. L. CAZALBOU.

In the number of the *Recueil de Médecine Vétérinaire* of October 15, 1904, M. Cazalbou published a clinical article on a case of double trypanosomiasis in a horse that had contracted the disease on the border of Bani in November, 1903. Two parasites that were morphologically distinct from each other were found in the blood. One, a long, narrow one, closely resembled the *T. brucei*, the other, a short, thick one, was provisionally considered to be the microbe that gave rise to Baléri, which is common and well known on the banks of the upper Black Volta, in the province of Koury.

Some experiments that have recently been made at the Pasteur Institute with a sheep that was inoculated at Segou, have proved that both these belong to a new species, the *T. pécaudi*, of Laveran. (Laveran: "Nouvelle contribution a l'ètude des Trypanosomiases de Haut Niger," *Comptes rendus de l'Académie des Sciences* for February, 1907). Since 1905 the Baléri disease has been studied by Pécaud, at Kati, in animals that have newly arrived from the Volta, and the author has, himself, seen three new cases at Segou, and he thinks that it would probably be interesting to publish his notes.

Symptoms.—(*a*) Temperature.—There are violent paroxysms of intermittent fever every 3, 4 or 5 days, rising up to 40° or 42°-43° C. The temperature rarely falls below 37° C., and the patients die from hyperthermia.

(*b*) Development of the Parasite.—The organisms are generally found at the height of the febrile attack. At first they are numerous, but become more scarce at the later stages.

(*c*) Ocular symptoms.—The conjunctiva is deeply infected and studded over with large petechia, that appear and disappear frequently. There is a great flow of tears and swelling of the eyelids, and in many cases keratitis, iritis, marked photophobia and pain, when the globe of the eye is pressed upon. In these cases pus and blood formed in the anterior chamber (hypopyon).

(*d*) Skin.—These swellings on the superficial layers of the skin, making the hair stand up on end, take on different forms and sizes, some assuming the shapes of irregular patches. They form rapidly, and disappear in from a few hours to one or two days, only to reappear again. Usually these patches appear after one of the febrile attacks, and are seen on the neck and upper parts of the body.

The swellings on the skin may consist of small patches that become confluent, of lines, generally over the ribs and running in various directions, or of patches with clearly defined borders. These patches, in some instances, are almost circular, about 3 inches in diameter, and have a great similarity to those of dourine. In other cases they are larger, irregular in shape, nearly covering the quarters, thighs, shoulders and fore-arm. They are higher at the edges than in the centre, and after they have disappeared form again in the same place. These large patches are not so frequently seen as the small round ones.

(*e*) *Œdema.*—Œdema in the subcutaneous connective tissues takes place a few weeks after the outset of the disease, the general locality being the sheath and scrotum, the lower portions of the limbs, and along

the abdomen. There is always great relaxation of the testicles. The œdema lasts for several days, when it disappears, but only to reform when in the sheath or limbs—under the abdomen it is more persistent. In this latter situation it is slower appearing, and is reabsorbed a few days before death. The hind limbs are more frequently attacked than the fore ones, and, although the enlargement is usually confined to below the hock it may extend further up.

(*f*) *Genito-urinary Apparatus.*—In entires there are frequent erections that are a marked contrast to the prostrate and wretched general condition of the animal. There is usually polyuria. The urine is of a dark or red colour, and deposits a considerable quantity of sediment when left standing. It contains albumen in variable quantities.

(*g*) *Nervous System.*—In the earlier stages the animal seems slack and out of sorts; he stands with his head down, eyes half closed as if going to sleep, and there is a flow of tears over the cheeks. Two or three weeks after the commencement there is weakness in the hind quarters with difficulty in standing, and when he moves the toes are dragged along the ground. This condition gets worse and worse, and finally he lies down and is unable to get up. In the last stages there is paralysis of the bladder and rectum.

Duration.—Out of four cases carefully studied by the author the animals lived from 3 to 4 months, *i.e.*, September or October to January or February.

Geographical distribution.—The cases studied all came from the Bani district, near the northern limit of the tsetse-fly region, latitude 14° N. M. Pécaud has seen it on the Upper Volta, and the author has reason for thinking that it is endemic between latitude 10° and 14° N., in the country north of the Ivory Coast and Dahomey. In 1891 and 1898 he saw the disease in Upper Senegal, in the neighbourhood of Kayes, in horses that had been imported from Algeria. He has seen the disease in donkeys but not yet found it in oxen.

Active Agent.—Like the *Trypanosoma dimorphon*, the trypanosoma of Baléri has two distinct forms.

(1) *The long, slender form.*—The organism measures from 25 to 35 microns, by 1½ microns. The posterior extremity is more or less rounded, in some actually pointed. The undulating membrane or wing is very straight, and the flagella fairly long. The nucleus is at the centre of the body, and is elongated in the direction of the axis of the body. The centrosome is some little distance from the posterior extremity, and the protoplasm is homogeneous.

(2) *The short, thick form* measures 14 to 20, by 3 to 4 microns. The posterior extremity forms a very short cone, and the undulating membrane is very large and folded three or four times. The nucleus, which is round, is found near the centre, and the centrosome at the posterior extremity of the body. In some cases chromatic granules are seen in the protoplasm.

In some cases the large form predominates, but according to Laveran both are always present. In fresh preparations the organism is very active, so much so that it is extremely difficult to distinguish between the large and small forms.

The author made some experiments at Ségou. A grey mouse was inoculated subcutaneously with 1 cc. of virulent blood. The period of incubation was seven days. There were always large numbers of parasites present till the animal died on the fourteenth day.

In the grey rat the incubation period was nine days. There was a great flow of tears which stuck the eyelids together, and there was also double ophthalmia. The animal died on the twenty-sixth day.

Two dogs were subcutaneously inoculated with 1 cc. of virulent blood; the incubation periods were five and eight days. The temperature rose to between 38° and 40° C., but before the dogs died, on the twentieth and twenty-second days, fell to 33° and 34° C. There were marked depression and emaciation in both cases.

Two woolly sheep were inoculated subcutaneously with 2 cc. of blood. The incubation period was from six to seven days. There were very few parasites in the blood and difficult to find. There were repeated febrile attacks, the temperature running up to 40·9° C. Death took place on the thirtieth and forty-fifth days. There were great weakness and emaciation in both cases. It is, however, worthy of remark, that a hairy African sheep, which was inoculated at Ségou on March 8, 1906, and brought to France for experimental purposes, was cured on July 16. As in Mbori, the woolly sheep is more susceptible than any other of the West African species. A 6-year-old female ass in foal, and a 4-year-old mule, were exposed between November 6 and 16, 1904, on the banks of the Bani; by November 20th, 1904, they had both become infected.

The disease assumed the chronic form, the febrile attacks were slight and at long intervals, the temperature not rising above 39° C., but falling to 34° C. There was at times a slight flow of tears, and as the disease progressed, the conjunctiva became pale in colour, but there were but few petechiæ and no œdema of the limbs. The mare aborted twice, and on each occasion an œdematous patch formed under the abdomen that lasted for several weeks. The coat became dull, and the hair easily came out.

The mule died on April 10, 1906, about 500 days after first becoming infected, but the mare was still alive at that date.

These two cases show that the donkey can resist the T. *pécaudi* for a long time, and the comparatively slight systemic disturbance would point to his being a considerable factor in the preservation and spread of the disease in an infected region.

An aged horse in very poor condition, that came from an infected zone, was inoculated in the jugular vein on November 27, 1906, with 4 cc. of virulent blood from a horse that had been infected on the Bani the previous August or September. The incubative period was five days, and on the sixth the temperature had risen to 40° C., and several parasites were found in the blood. During the next thirty days there were eight attacks of fever, with an average temperature of 40° C., in two cases it went up to 42° C. About the fortieth day it went back to normal, and remained there, although there were enlargements of the hind portions and sheath. About the sixtieth day the animal was considered to have recovered, as rats and mice inoculated with his blood failed to react.

Etiology.—This horse and the two donkeys were bitten both by tsetse and gadflys, and no doubt they helped to infect them; but the locality from which they came renders it extremely probable that they were also attacked by the glossina.

Diagnosis.—This is simple, as the symptoms are well marked. The paraplegia that is so quickly developed, and the presence of the two

distinct forms of parasites, should leave no doubt as to the cause. In Mbori and Souma it is possible in the earlier stages to overlook a case, but in Baléri this is impossible.

Treatment.—The author recommends that all infected animals should be at once destroyed, as there are no known curative measures at present.

(*Revue Générale de Médecine Vétérinaire.*)

THE NORMAL TEMPERATURE OF THE GUINEA-PIG.

BY KOVARZIG.

THERE is a great divergency on this point, Kasparek giving it between 36·8° and 37°, Donitz 38·2° and 38·8°, Aujeszky 38° and 39°, and Krompecher 37·8° and 38·5°. Detre gives it between 37° and 38° for guinea-pigs weighing less than 300 grammes, and 37·2° and 37·5° for larger ones.

The author made a careful series of observations, extending over several days, on 100 guinea-pigs, taking the temperature of each animal four times per diem, and found that in guinea-pigs weighing less than 300 grammes the mean temperature is 37·9°, in larger ones 38·1°, and that it varies between 37·9° and 38·3°.

(*Közlemenyck az. osszehasonlito elet-es Kórtan Köreböl.*)
(*Revue Générale de Médecine Vétérinaire.*)

THE DEVELOPMENT OF THE "BRADSOT" SICKNESS (BRAXY) AMONGST SHEEP IN CENTRAL GERMANY.

BY PROFESSORS DAMMANN AND OPPERMANN, HANOVER.

BRADSOT is an infectious disease in sheep that is known in Iceland, Norway and the Faroe Islands. In 1901 it extended to Mecklenburg and Pomerania, and in 1905 the authors saw it on a farm in Hanover.

The disease appeared in the autumn during damp, cold weather; the sheep staggered about, could not walk straight, were blown up, and died in twenty-four hours. It was invariably fatal, but cattle were not attacked. On *post-mortem* examination all the organs were covered with petechia and patches of extravasated blood. Nothing was found on miscroscopic examination of the liver, spleen or kidney, but scrapings from the peritoneum showed these fine bacilli, which also were found in an almost pure condition in the abomasum.

Fragments were placed under the skin of guinea-pigs, rabbits, fowls and mice. The guinea-pigs and mice died in about thirty-six hours, with voluminous œdema that contained the bacillus of Bradsot. A two-year-old sheep was inoculated under the elbow; fourteen hours he was standing with arched back, the temperature 40·1° C., and he died in thirty-four hours. Three cc. of splenic pulp from this sheep were inoculated into a young pig, which died.

These experiments confirm those of Jensen and Peter, which show

that the disease can be communicated by inoculation in the sheep, pig, mouse, guinea-pig, rabbit and pigeon. Although Jensen has been unsuccessful in transmitting the disease by ingestion, he is of opinion that the virus is conveyed to the system through the abomasum.

The authors were equally unsuccessful till they tried the powdered meat on which sheep are fed in these northern latitudes, when they had positive results. The powder contained the bacillus of Bradsot, and no doubt inoculation took place through wounds and abrasions in the skin.

(*Deutsche tierarztliche Wochenschrift.*)

TYPHO-MALARIA IN HORSES IN THE SENEGAL.

BY JUBEAUX.

THE disease, which does not appear to be contagious, is epidemic in horses imported into Senegal during the autumn, and in damp, marshy places. It is also worse during heavy rains.

The disease manifests itself very rapidly. The conjunctiva is purple, and covered with ecchymoses, and the temperature 40° to 41° C. The respirations are quickened, and the pulse imperceptible, although the heart beats are most violent. A short time before death there is a slight frothy discharge from the nose, with a painful suppressed cough. Death usually takes place in from thirty-six to forty-eight hours after the first appearance of any symptoms. Very few animals recover, and those that do have no immunity against another attack.

The vessels are found, after death, to be filled with dark, tarry blood, and the tissues engorged with a gelatinous œdema. The bronchial tubes are filled with an albuminous discharge, and the chest, abdomen, and other serous cavities contain a quantity of yellow-coloured fluid. In places there are patches of ecchymoses, and the spleen is considerably enlarged.

The author has frequently examined the blood and serous fluids, and has found both streptococci aud cocco-bacilli, but no hæmatozoa.

(*Recueil d'Hygiéne et de Médecine Vétérinaires Militaires.*)

AN OUTBREAK OF PURULENT OTITIS OF THE MIDDLE EAR IN PIGS.

BY ARVID BERGMANN.

INFLAMMATION of the middle ear in animals has been but very rarely described, and the few cases on record have been caused by penetration of foreign bodies or the extension of inflammation from the pharynx through the eustachean tube, but in the majority of cases the disease passes unnoticed.

Tubercular middle otitis in pigs has been seen by Schütz and Siedamgrotzky, and Marcade mentions a case in a horse that was complicated with paralysis of the facial nerve. Bartolucci met a case in an ox which he attributed to an accumulation of pus in the frontal sinus. Arvid Bergmann saw a case in a cow, in Stockholm, and Gutbrod

reports another in a cow that suffered from locomotor irregularity, with an abnormal position of the head. There was a sudden discharge of pus from the ear, followed by perfect recovery.

The disease in the pig has not been mentioned. The author saw nine cases in pigs from two to four months old, in a district infected with swine plague. The pigs carried their heads on one side, walked crooked, and with a staggering gait, and always lay down on the side that they turned their heads away from.

Three *post-mortem* examinations were held. In all three cases there were old lesions of pneumonia in the anterior lobes of the lungs, with small encapsuled abscesses containing thick pus. The auditory canal and mastoid cells were also filled with thick pus. In all three cases the lungs and bronchial glands contained the *Bacillus suisepticus*, and that from the abscess and middle ear, the *Bacillus pyogenes suis*.

Bergmann is of opinion that medium otitis in the pig is a complication of swine plague, probably from contamination through the eustachian tube.

(*Svensk Veterinartidskrift.*)

DIABETES MELLITUS IN THE DOG.

BY M. DORRAS, PARIS.

DIABETES MELLITUS in animals is uncommon, and standard works contain but few recorded cases. The author reports two that recently came under his notice. The first was a black greyhound bitch, aged about 14. The animal was in bad condition and nearly blind from cataracts in both eyes. The appetite was bad, but she ate meat, which she was almost entirely fed upon. There was an almost unquenchable thirst. The bitch moved with difficulty, but preferred to lie down and curl herself up; the urine was passed in large quantities and very frequently. The tail at the middle portion was exceedingly painful when handled, the slightest touch making her cry out and try to bite. On examining the part the author discovered a small ulcer about a centimetre long, round which the skin was hot, red and swollen. The pain was greater at the base than the top of the tail, and the temperature about 39·3° C.; the tail was, in fact, gangrenous.

The presence of this gangrene and the ulcer, together with the cataracts, bad condition, excessive thirst and polyuria, all pointed to diabetes, which the examination of the urine confirmed. It was pale yellow in colour, acid reaction, no trace of albumen, and gave a characteristic reaction with Fehling's solution; it was found to contain 11·50 grammes per litre of sugar—a large proportion for a dog of that size. The diagnosis was diabetes with moist gangrene and the tail was amputated the next day, but the bitch died a few hours after.

The portion of the tail that was amputated was soft and œdematous, the skin having sloughed away at the tip had left the muscles bare and exposed; they were of a red or violet colour, like spleen pulp. There was nothing peculiar to be seen on *post-mortem* examination; the liver was slightly larger than normal, hard, dark brown in colour, the surface granular, and the capsule thickened; microscopic exami-

nation showed it to be in a state of cirrhosis. The spleen was enlarged, the heart hypertrophied, the other organs healthy.

The second case was a mastiff bitch, aged 13, that was a great pet of her owners. She was in bad condition and had been getting worse for some time past, and when seen had great difficulty in moving; she could not climb up the stairs of the house. This animal also had cataracts in both eyes that had developed very rapidly. The appetite was good, and although for the first three months there had been great thirst, it had become normal, also the quantity of urine that was passed. On examination it was found to be thick and turbid, with an acid reaction, no albumin, and 2·20 grammes of sugar to the litre.

The animal had been fed on bread, which was changed to a meat diet; this caused slight temporary improvement, but the patient died shortly after. A curious fact was that the first symptoms were noticed after the owner had been away from home for some time; during his absence the bitch had been greatly distressed.

The two cases appear to be interesting, more particularly the first, on account of the accompanying gangrene, which is so common in the human being.

These two cases show the symptoms of diabetes in the dog with great clearness, and the author lays stress on the age of the patients, the double cataract, poor condition without loss of appetite, weakness and polyuria, and remarks that if the urine were systematically examined in similar cases it would be found that diabetes mellitus in the dog was much more common than is generally supposed.

(*Recueil de Médecine Vétérinaire.*)

POLYPUS IN THE SINUSES OF THE HEAD; OPERATION; RECOVERY.

BY DARMAGNAC.

THE animal was a mule that had a greyish-coloured, bad-smelling discharge from the left nostril. The submaxillary gland was hard and swollen, but not painful or adherent to the jaw; there was considerable pain shown when the left side of the face over the sinus was pressed on, but no reaction to mallein.

The frontal and maxillary sinuses on the left side were both trephined, and found to be filled up with a soft, gelatinous, pink-coloured growth, and when the cavity was explored with the finger it was found that the plate of bone that separated the upper from the lower maxillary sinus was completely destroyed.

The frontal sinus was opened in two fresh places, the three openings connected and the bone removed with a chisel, but even then it was found to be too small, and had to be further enlarged, 8 by 6 cc. in the frontal and 9 by 6 cc. in the maxillary.

The growth then came clearly into view, and was found to be adherent by a large base over the bottom of the lower maxillary sinus. It was removed in fragments with the fingers and blunt points of the scissors with a good deal of difficulty, and the bone where it was attached carefully curetted. The portion removed was the size of a man's two clenched fists, pink in colour, soft and gelatinous in con-

sistency, lobulated and pear-shaped in form. On microscopic examination its structure was found to be a hyalin myxoma. The operation gave rise to considerable hæmorrhage, but the cavities were irrigated freely with a warm solution of lysol and plugged with iodoform gauze. The upper portions of the wound were sutured, but the lower left open for drainage.

The plugs were removed on the second day, the cavities again irrigated with the lysol solution, powdered over with iodoform, and the part from which the tumour grew curetted, a gauze drain being placed in the lower parts of both openings.

The results were satisfactory; the wounds and cavities were freely irrigated with the antiseptic solutions, the operation wounds healed up, and the animal was discharged from the hospital fit for work in a month. Up to the time of writing there has been no signs of reappearance.

(*Recueil d'hygiene et de Médecine Vétérinaires militaires.*)

PLEURO-PNEUMONIA FROM PERFORATION OF THE ŒSOPHAGUS.

BY M. CUNY, LYONS.

THE author begins by remarking that, although a serious matter, perforation of the œsophagus in the cervical portion is not incurable, but if it should take place in the thoracic portion it gives rise to fatal pleuro-pneumonia.

The animal in which the accident occurred he reports was taken ill the day before, being dull, depressed, pulse 60 beats per minute, the artery full and tense, and the temperature 39·6° C.; the respirations were short and quick, but auscultation and percussion only gave negative results. Treatment caused the temperature to fall, and the patient fed a little, but very slowly, as if there was difficulty in swallowing. For a few days he seemed to be improving, when he again went off his feed, and the temperature rose to 40·2° C. The respiration became very much quickened, and percussion over the left side of the chest showed an irregular patch of dulness over the upper convexity. On the right side the dulness was confined to the lower portion of the lung. Over the rest of the chest the resonance was normal, the vesicular murmur being very clear, the expiratory being accompanied with a bronchial bruit. Over the lower third of the chest there was a friction sound that was independent of the respiratory movements; the heart sounds were easily distinguished. The author diagnosed double pleurisy. The animal became rapidly worse and died on the ninth day.

On *post-mortem* examination the right pleural sac was found to contain a small quantity of fluid, and covered over with thick, false membranes of a pale yellow colour, but there was no trace of pleurisy on the left side. The dulness was caused by collapse of the lung, which was small, of a dark red colour, and the same consistency as the spleen. The œsophageal glands were congested, and in the posterior mediastinum turned into a large abscess. The œsophagus itself was quadrupled in size, the walls being from 3 to 5 centimetres thick, with

numerous ulcerations on the lining mucous membrane. Embedded in the false membrane on the pleura were a number of fragments of food that proved the cause of the disease.

Pleurisy of this class is developed by stages, and in place of finding a dirty red, brown thick pus, with a putrid smell, in the wounds, there are the lesions of sero-fibrinous inflammation. The friction sounds that are synchronous with the contraction of the heart and independent of the respiratory movements, are explained in Mathis and Labat's Pathology. When the sound is confined to one side only, but over a considerable surface, it is pleurisy. If both sides are affected it is difficult to distinguish the pericardial bruit. Dulness of the lung from mediastinal pressure may be due to a tumour, mediastinal pleurisy, or an abscess, and it may exist in different regions of the lungs, in either the upper or lower portions.

(*Journal de Médecine Vétérinaire et de Zootechnie.*)

THE RATIONAL TREATMENT OF CANKER IN THE FOOT.

BY PROFESSOR LIÉNAUX (BRUSSELS).

THE author defines "canker" as chronic eczema of the horn, and, according to Sabouraud, Besnier and Pader, the lesions are identical, and confined to the vascular system, consisting of congestion and œdema.

The line of treatment in both is to relieve the congestion and œdema in the diseased parts, and in canker this is more difficult to carry out, as the disease is located in the lower parts of the limbs, where the blood is more prone to congestion. Standing still will of itself cause the limbs to swell, also any pre-existing lesion, such as a wound, cicatrix, induration of the cellular tissue, or periostitis. Chronic inflammation and hypertrophy of the hoof also predisposes the part to venous stasis and œdema.

The animal should be regularly worked to remove the œdema caused by standing, "*De cheval affecté de crapaud doit gagner son avoine.*" The pressure on the altered tissues counteracts the ill effects of rot in the same manner as bandages act on enlarged fetlock joints. For the same reason pressure to the diseased sole is applied by various mechanical means: tow pledgets (Renault), mastic (Bernard), gutta-percha (Vivier), and plaster of Paris, or a plate shoe (Naudinat). Any application used should absorb the transuded fluids, and should not interfere with the pressure exerted by or the absorbent properties of the dressings.

The author recommends the Danish method. The horse is at work all the time. The sole is thinned down, and the altered horn removed, so that the diseased tissues are exposed. The part is then powdered over with salicylic acid, and pressure applied by means of a damp pad of tow kept in position by a leather sole or a plate shoe.

The dressing is changed every three or four days in cases of wet, and every week in dry, canker; a cure may be expected in about three months (Dr. Sand). The author obtains more perfect pressure by steeping the tow in Delwart's pitch mixture, and finds that the salicylic acid can be replaced by hypochlorate of lime, or boracic acid, neither of which coagulate albumin.

(*Annales de Médecine Vétérinaire.*)

SUB-PAROTID ABSCESS.

BY SAVARY.

Most authors regard inflammation of the sub-parotid glands as a simple matter devoid of danger, but M. Savary states that in Algeria at all events they are common, that they are confused with other conditions of the part, and that they may be of considerable danger.

Inflammation of the maxillary gland is generally due to particles of food entering the duct, causing small abscesses to develop along its course, that burst spontaneously, internally or externally. The pathogenic germs may attack the gland itself. The symptoms that point to suppuration and destruction of the acini are an extremely fœtid greyish-red discharge, containing a quantity of greyish coloured *débris* of the gland, and diffused swelling of variable extent over the posterior half of the jaw. It is also not uncommon to find the lower border of the parotid gland enlarged, simply from the smaller condition of the deeper seated one that mechanically raises it up.

If the collections of pus are located in the posterior portion of the gland, it is advisable to open them to prevent the serious sloughing that is likely to set in and be fatal.

Care must be taken in any surgical interference with the part, on account of its richness in nerves and great vascularity.

(*Recueil d' hygiene et de Médecine Vétérinaires Militaires*).

AN ANTISEPTIC OR ASEPTIC BANDAGE FOR BROKEN KNEES IN HORSES.

BY M. P. RELIER, VETERINAIRE EN 2em 2e CUIRASSIERS.

Every practitioner is aware of the difficulty there is in applying a bandage or dressing to a horse's knee or hock, and the author has adapted one from a first dressing for human beings that has been devised by Dr. J. Cavalier, surgeon-major 2nd Cuirassiers. He claims for it that it is easily and quickly applied and remains in position; it also has the great advantage of not becoming contaminated even if handled by persons whose hands are not clean. He has used it in cases of broken knees, and the horse has walked back 5 or 6 miles to his stable without the dressing shifting more than an ordinary knee-cap would; he has also left the first dressing on, "in cases where horses have been moved by rail," for three days without any suppuration. He speaks in favour of its use after firing, having left it on for five days without the formation of pus.

The dressing is made up of gauze, absorbent wood wool, and the outside bandage. The bandage is retained in position by four flexible galvanised iron wires, fixed at the four corners, doing away with tapes, strings, pins, &c.; the whole is contained in two paper coverings, the first of sterilised filter and the second of strong waterproof paper; the last is hermetically sealed. There is a loop of string through the corner to tear it open with. The wires are folded up on themselves to facilitate packing, but are easily straightened out. M. Relier says he has carried these dressings about in an ordinary

farrier's wallet during military manœuvres and afterwards had the contents tested bacteriologically, and they were still sterile.

The ends of the bandage are not the same, one is square, the other tapers so as to allow of its overlapping. It is made in three sizes, of the following dimensions, viz.:—

	Folded.	Unfolded.
Small	6 inches by 4½ inches by ¾ inch. ...	2 feet by 6 inches by ¼ inch.
Medium	8 inches by 4¾ inches by 1 inch. ...	3 feet by 8 inches by ¾ inch.
Large	10 inches by 6½ inches by 1½ inches. ...	3 feet 4 inches by 10 inches by 1 inch.

These do well enough, but for very large horses the author finds 3½ feet a better length.

The method of adjustment is most simple. The outer waterproof covering is opened by simply tearing the string, and the filter paper is unfolded exposing the bandage. This should not be touched by the hands, the wires will give a firm hold. The wires at the largest end should be given to an assistant, and the bandage put on, commencing at the smallest. In the case of a broken knee it is advisable to hold up the opposite foot; the wires are then twisted round each other and the ends cut off with a pair of scissors; care should be taken that the lower ones are not too tight.

The author highly recommends this dressing for use in the field, as it saves much trouble and delay, being always ready for use. If the gauze is medicated it costs about 4d. more than the ordinary aseptic material.

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GLANDERS PRODUCED ARTIFICIALLY IN THE OX.

BY PROFESSORS RIEGLER AND CINCA (BUCHAREST.)

ALL attempts to produce glanders in the ox have failed up to the present, and this species has been looked upon as absolutely immune. In the course of their investigations the authors found that cows died in less than twenty-four hours after a culture of glanders material on gelose had been injected intravenously. Cultures from the blood of these cows gave a pure growth. Between July 24, 1904, and February 23, 1905, a cow was given six intravenous injections of glanders material that had been killed by heat. On February 23 the same cow was inoculated with a hyper-virulent culture that killed a rabbit in from twenty-four to thirty-six hours. The culture was detected in 10 cc. of a 7 per cent. solution of sea salt, and 2 cc. were injected intravenously.

There was high fever, the temperature rising to 40·5° C., which lasted for twenty days. On March 18 the cow went down and the temperature fell to between 38° and 39° C. The patient remained in this condition for about three weeks, during which time she only took a little water. During the last days of her life there was a discharge from the nose, and on April 7 two typical ulcers appeared on the septum. She died on the evening of April 7.

When the skin was removed the connective tissue was found to contain a number of yellowish-white nodules, varying from the size of a hemp seed to a small pea. They were surrounded by a red zone and

the centre was opaque. The contents were caseous, slightly granular in consistence, and contained some hard grains like sand. There were neither abscesses or corded lymphatics, and the skin was intact. In the lungs were a number of grey patches containing hard nodules, granular on section and varying from the size of a small nut to a hen's egg. There were a large number of granular nodules, from the size of a hemp seed to that of a pea, in the lungs, and the bronchial glands were enlarged, soft, and hæmorrhagic. The trachea was studded over with a large number of miliary nodules, both isolated and confluent. On the septum in the right nostril was a granular ulcer about the size of a sixpence, and two in the left. Higher up on both sides were about twenty more, and on the mucous membrane of both turbinated and ethmoidal bones there were a large number of nodules. Cultures from the blood, liver, and the kidneys gave a moderate growth, but when taken from the lesions an abundant one.

Three rabbits that were inoculated from the lesions in the lungs, died on the seventh, seventeenth, and twenty-first days, and a mouse with an emulsion from the lesions on the skin on the eighth day.

From the results of the authors' experiments it would appear that glanders can be given artificially to the ox, and that it is very similar to the same disease in the horse, where it is naturally acquired.

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Books and Periodicals, &c., Received.

Department of Agriculture and Technical Instruction for Ireland; Board of Agriculture and Fisheries; U.S.A. Department of Agriculture; W. H. Dalrymple; "Veterinary Physiology." by Colonel F. Smith, 3rd edition (Baillière, Tindall and Cox); "Surgical Anatomy of the Horse," Part II., by J. T. Share-Jones (Williams and Norgate); Journal of the Royal Army Medical Corps; L'Echo Vétérinaire; American Veterinary Review; Agricultural Journal (Transvaal); Tropical Agriculturist (Ceylon); "Bactericlogical Examination of Disinfectants," by W. Partridge (Sanitary Publishing Co.).

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